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The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

IN THE MATTER OF THE GAS RESOURCES PRESERVATION ACT

AND IN THE MATTER of a Joint Hearing to determine various questions
relating to the proposed Export of Natural Gas from the Province of Alberta.

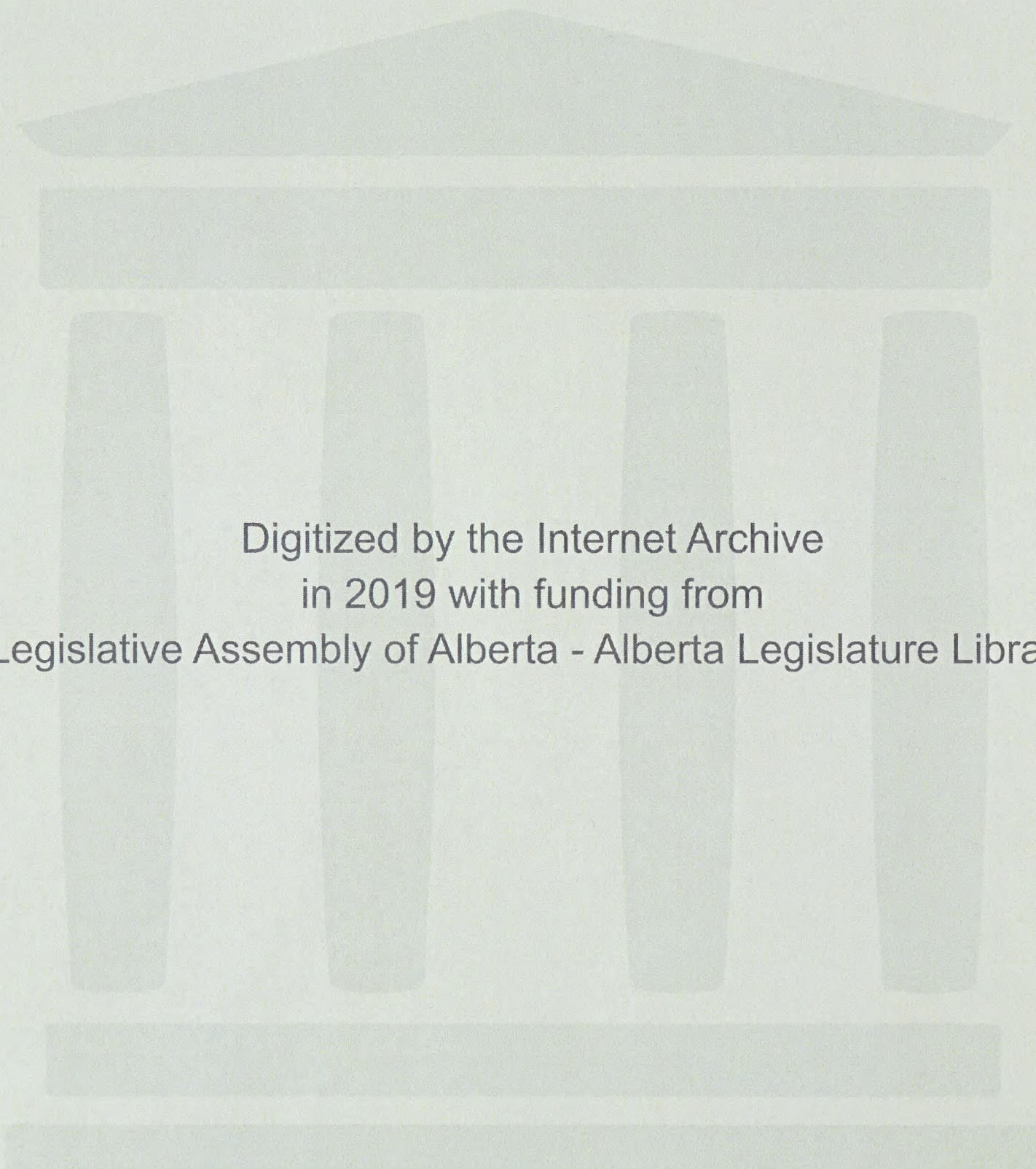
I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

Session: December 12th, 1951.

Volume 32.



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I N D E X

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G. Whitney,
Cr. Ex. by Mr. Milvain

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December 12th, 1951.

GORDON WHITNEY, recalled, already sworn, cross-examined by Mr. Milvain, testified as follows:-

Q At the conclusion of yesterday's Hearing, Mr. Whitney, you told me that you are not the one to tell me about taconite, so that we won't worry about it. Now, I gather from what you told me yesterday, that you agree that 80% of the total gas will go to the United States in first year and 74% in the fifth year, that is in rough figures?

A That is the annual figures, yes.

Q That is the annual figures?

A Yes.

Q Now, from that fact, Mr. Whitney, it would rather appear that this line has been designed principally for the benefit of the Northern Natural Gas Company. What do you say about that?

A Well, that is not my opinion.

Q Not your opinion?

A It is designed principally for the benefit of the Prairie Provinces and Northern Natural Gas Company sales are a means to the end.

Q Even though they get something in the neighbourhood of a fifth of the total throughput?

A They get some 46% of the capacity.

Q Now, in your opinion, Mr. Whitney, would a project such as that contemplated in this scheme, be preferable from a Canadian point of view to an all-Canadian route to Eastern Canada?

A

G. Whitney,
 Cr. Ex. by Mr. Milvian

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 capacity, so that we won't worry about it. Now, I gather
 from what you told me yesterday, that you agree that 80%
 of the total gas will go to the United States in first year
 and 75% in the fifth year, that is in rough figures?

A That is the annual figures, yes.

Q That is the annual figures?

A Yes.

Q Now, from that fact, Mr. Whitney, it would rather appear
 that this line has been designed principally for the
 benefit of the Northern Natural Gas Company. What do you
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A Well, that is not my opinion.

Q Not your opinion?

A It is designed principally for the benefit of the Prairie
 Provinces and Northern Natural Gas Company sales are a
 means to the end.

Q Even though they get something in the neighborhood of a
 fifth of the total capacity?

A They get some 40% of the capacity.

Q Now, in your opinion, Mr. Whitney, would a project such as
 that contemplated in this scheme, be preferable from a
 Canadian point of view to an all-Canadian route to Eastern

Canada?

A

G. Whitney,
Cr. Ex. by Mr. Milvain

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A Would this be preferable?

Q From the Canadian point of view.

MR. MARTLAND: You want his opinion as an American,
do you?

MR. MILVAIN: Well, I just want his opinion.

A Well, my personal opinion is that an all-Canadian route
to Eastern Canada is not advantageous to anybody.

Q For what reason?

A Well, I am speaking now from my own personal opinion, that
I think it would be too high-priced gas when it gets to
market.

Q You think it would not be a feasible project?

A Well, I would not go so far as that. I think it would be
very high-priced gas when it does get to market.

Q And for that reason you do not think it would be a feasible
scheme?

A I think this would be better from the point of view of
Winnipeggers and the people in Saskatchewan.

Q Do you think it would be feasible from a commercial point
of view, to pipe gas all-Canadian to Eastern Canada?

A Well, I gave you an offhand opinion before. I have not made
a detailed study of it.

Q Your offhand opinion is that it would not be feasible, I
take it?

A That is right.

Q Now, I gather from the evidence that was given by yourself
and other witnesses, that none of you are in a position to
give us the price at which gas will be sold at the various
points along the line? For instance, Swift Current or
Saskatoon?

G. Whitney,
Gr. Ex. by Mr. Milvain

A Would this be preferable?

Q From the Canadian point of view.

MR. MARSHALL: You want his opinion as an American,

do you?

MR. MILVAIN: Well, I just want his opinion.

A Well, my personal opinion is that an all-Canadian route

to Eastern Canada is not advantageous to anybody.

Q For what reason?

A Well, I am speaking now from my own personal opinion, that

I think it would be too high-priced gas when it gets to

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A Well, I think it would be a feasible project, I think it would be

very high-priced gas when it gets to market.

Q You think it would be a feasible project, I think it would be

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schemes?

A I think this would be better from the point of view of

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Q Do you think it would be feasible from a commercial point

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give us the price at which gas will be sold at the various

points along the line? For instance, Swift Current or

Saskatoon?

G. Whitney,
Cr. Ex. by Mr. Milvain

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A Well, there has not been any rate set as yet.

Q You have discussed it, I suppose, with prospective customers, we will say, in Swift Current?

A No, we have had very little discussion as to price.

Q Has any price there been discussed at all?

A No.

Q Or in Saskatoon, or Regina?

A No, not to my knowledge.

Q Brandon, or Winnipeg, or any other point?

A Well, there have been such general discussions as Mr. Harris indicated yesterday as to what it would take actually to get the gas there.

Q That would be within a price range?

A That is correct.

Q What would be your idea of the price range, we will say, in Winnipeg?

A Well, as Mr. Harris said, somewhere around 31, 33 cents.

Q You think that that would be the price at which gas would be delivered, sold to the system in Winnipeg, the distributor, or to the customer?

A That is at the city gate.

Q That is at the city gate?

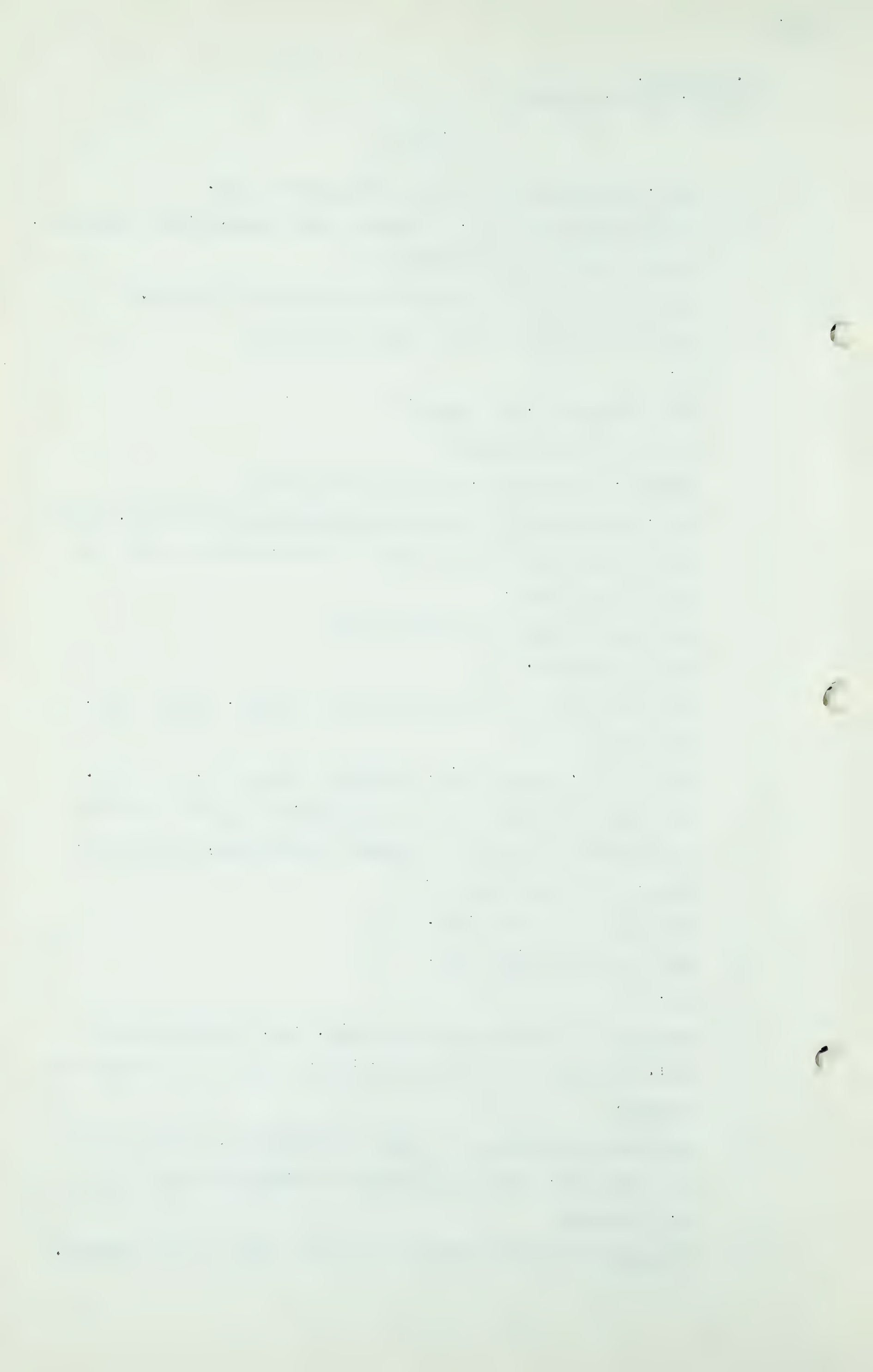
A Yes.

Q And would a similar price maintain, say, at Saskatoon?

A Well, the price is obviously going to depend on the type of service.

Q Would you think that the price at Saskatoon, delivered to the City gate, would be also in the neighbourhood of 31, 32, 33 cents?

A It might be perhaps somewhat a little lower on the average,



G. Whitney,
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because of the interruptible load that is available there.

Q You think that might allow you to reduce it a little bit below that? How much?

A Well, in some of the evidence which will come later, there will be a sample rate, a rate on which the pipe line could operate and provide the necessary return.

Q What is that sample rate, does it appear in one of the other exhibits?

MR. MARTLAND: It is going to be put in.

A It is a rate which will provide approximately the revenue indicated in one of the other exhibits.

Q MR. MILVAIN: That is to be put in as another exhibit?

A Yes.

Q And does that also give the price at which gas will be delivered at the International Boundary at Emerson to Northern Natural Gas?

A It does not apply to the price at which it will be delivered anywhere. It is the price at which it can be delivered, and which will provide the revenue necessary to make the pipe line go.

Q Have you an estimate as to what price it would be delivered to Northern Natural Gas at Emerson?

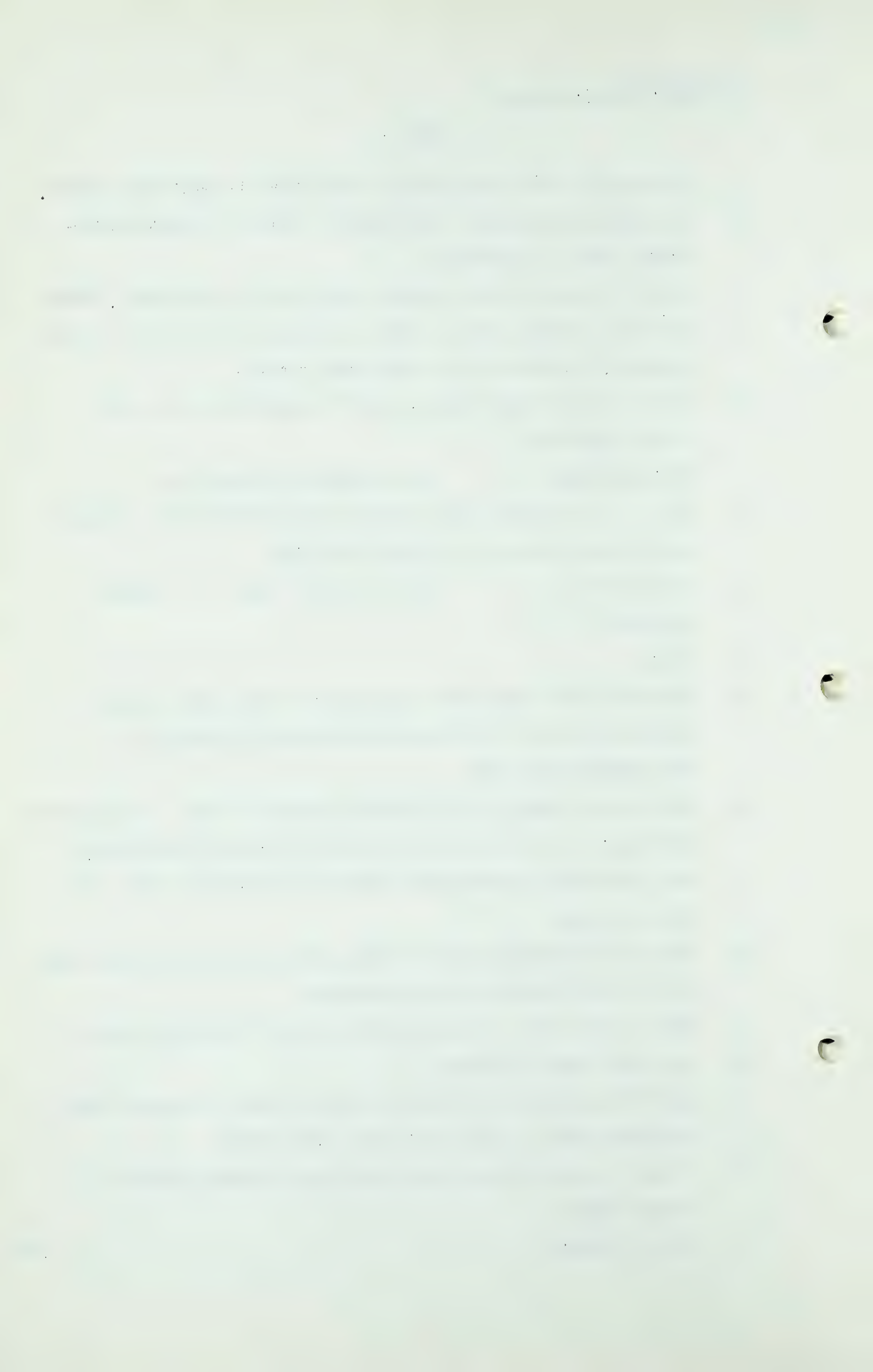
A Well, I can only tell you what it would be on this rate.

Q And that would be what?

A At 100% load factor, which is the way that we project that Northern sale, it would be about 26.3 cents.

Q I see. And if your load factor were reduced, would it change that?

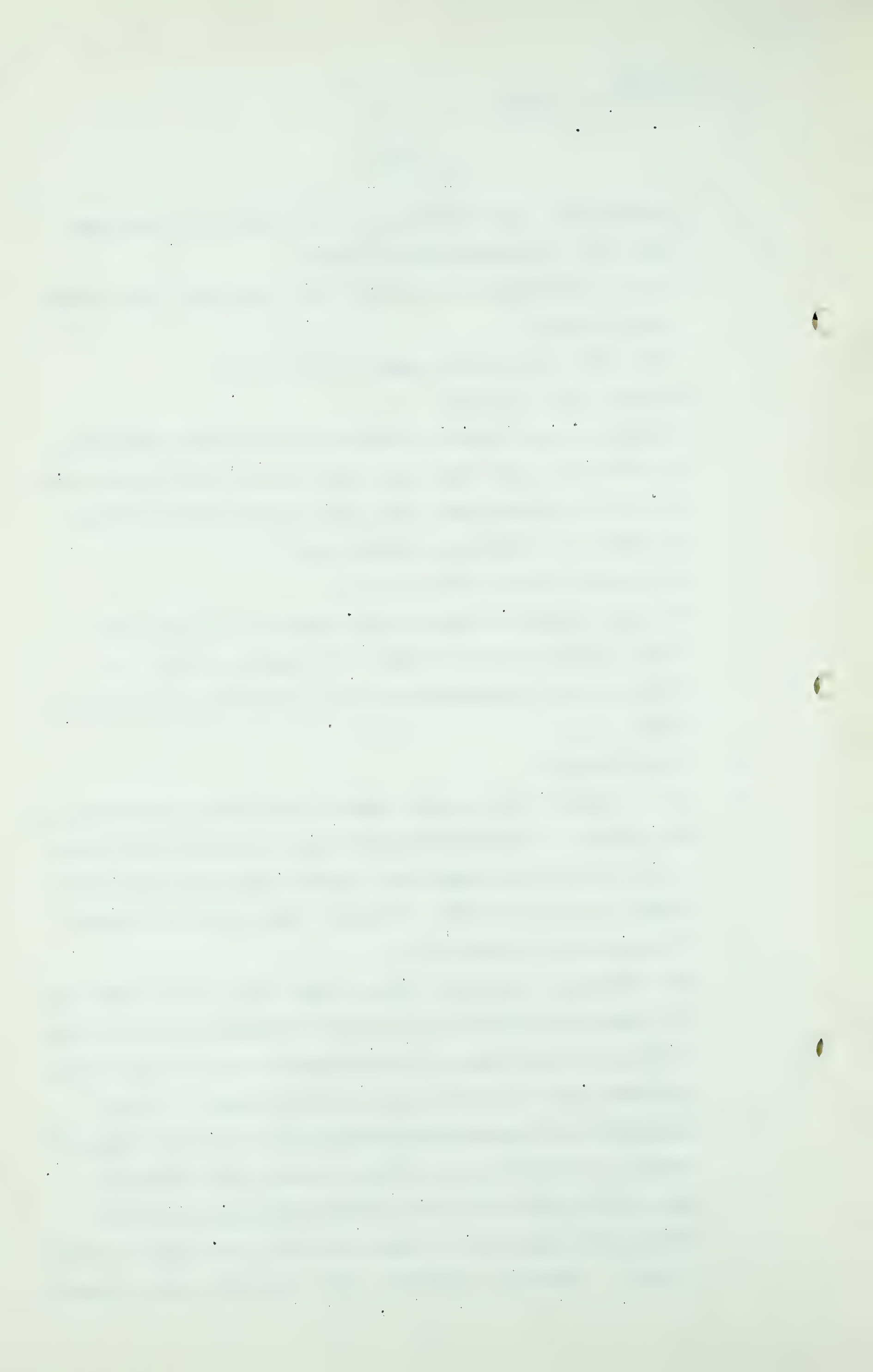
A Yes, it would.



G. Whitney,
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- Q Suppose that you reduced it, we will say, to 75% do you know what the price would be then?
- A I have calculated it at 80 and 70. Would you like either one of those?
- Q That will be all right, make it 80 or 70.
- A At 80, 27.9, 70, 29.1.
- Q I gather, too, from the evidence that you gave yesterday, Mr. Whitney, that there have been no contracts entered into with any customer other than the contract with Northern, and which is marked as Exhibit 104?
- A As far as I know, that is true.
- Q So that insofar as these power plants at Saskatoon and Prince Albert are concerned, with regard to which you speak as your interruptible load, you have no contract with them?
- A That is right.
- Q Now, I gather from another exhibit, that has not been put in yet, which is called "Proposed Route", that the line, that is the lateral that goes up to serve Saskatoon and Prince Albert, is approximately 202 miles long, is that correct?
- A I believe that is about it.
- Q And although it does not tell us what the size of that line is, there is another exhibit called "Estimated Cost of Construction", from which it would appear that there are three different sizes of pipe used on that lateral. It is Appendix IV of the exhibit "Estimated Cost of Construction", which is not filed as yet, but it shows 202.3 miles of $10\frac{3}{4}$, $8\frac{5}{8}$, and $6\frac{5}{8}$, all outside dimension, which are used in that line, but it does not tell us how much of each is used. Generally speaking, what size of a line is that?



G. Whitney,
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A Well, these exhibits have not been presented yet. I can dig into some of the papers and find out for you.

Q Is it a 10 $\frac{3}{4}$ -inch line? Or is it an 8-5/8-inch line, or what is it, that is going to carry your gas up there?

MR. MARTLAND: There will be a witness dealing with that, sir. It might expedite things if he were asked about it.

MR. MILVAIN: You are going to break that down?

MR. MARTLAND: He will be in a position to give you the answer more readily than Mr. Whitney.

MR. MILVAIN: Very well, that is fine. I see that the cost of the whole lateral is going to be \$4,584,670.00. That is the cost of that lateral. Do you agree with that?

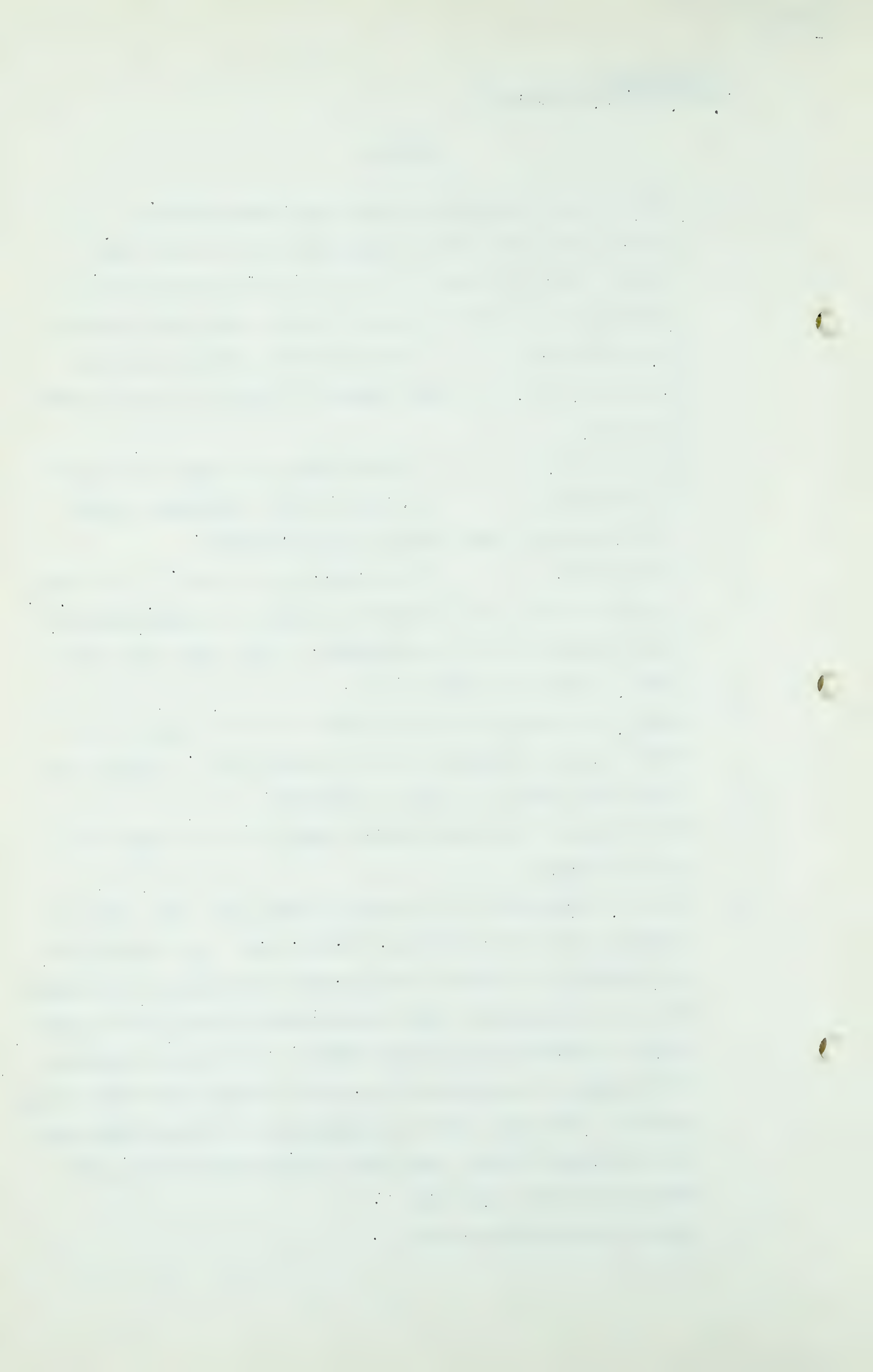
A Well, I did not prepare that.

Q Well, if it appears in your exhibit that is going to be filed called "Estimated Cost of Production", I suppose you will accept that as being the figure?

A If it has the Stone and Webster name on it it should be a good figure.

Q Well, I just wanted you to bear in mind that this line is going to cost you over \$4,500,000.00, and I am looking now at Appendix IV of Exhibit 106, which you discussed yesterday, and I am interested in the total amount of gas that is being sold in Saskatoon and Prince Albert. As I take the figures, which appear in Appendix IV, out for Saskatoon and for Prince Albert, I find this, that in Saskatoon you are selling under firm contract 201,200, and under interruptible 2,135,300. That is correct, isn't it?

A That is in the first year.



G. Whitney,
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Q That is in the first year?

A Yes.

Q And in the Prince Albert, firm 72,700, interruptible 653,800?

A Those are the figures, yes.

Q Now, if you total those all together, you get a total of 3,063,000?

A I would say that appears in order. I do not have that.

Q That appears in order?

A Yes.

Q And of that total of 3,063,000, it would appear that 2,789,100 is going to the interruptible sales, that is, to the power companies.

A Well, this is in the first year of operation.

Q

A When the distribution systems would be starting operations.

Q But the summary that I have made here, subject to my arithmetic being correct, is sound, is it not?

A Those are the figures as they stand there.

Q And in the fifth year, if you go through the same process, you find there is a total of 4,655,800, of which 2,780,200 goes to your interruptible?

A I imagine those are correct.

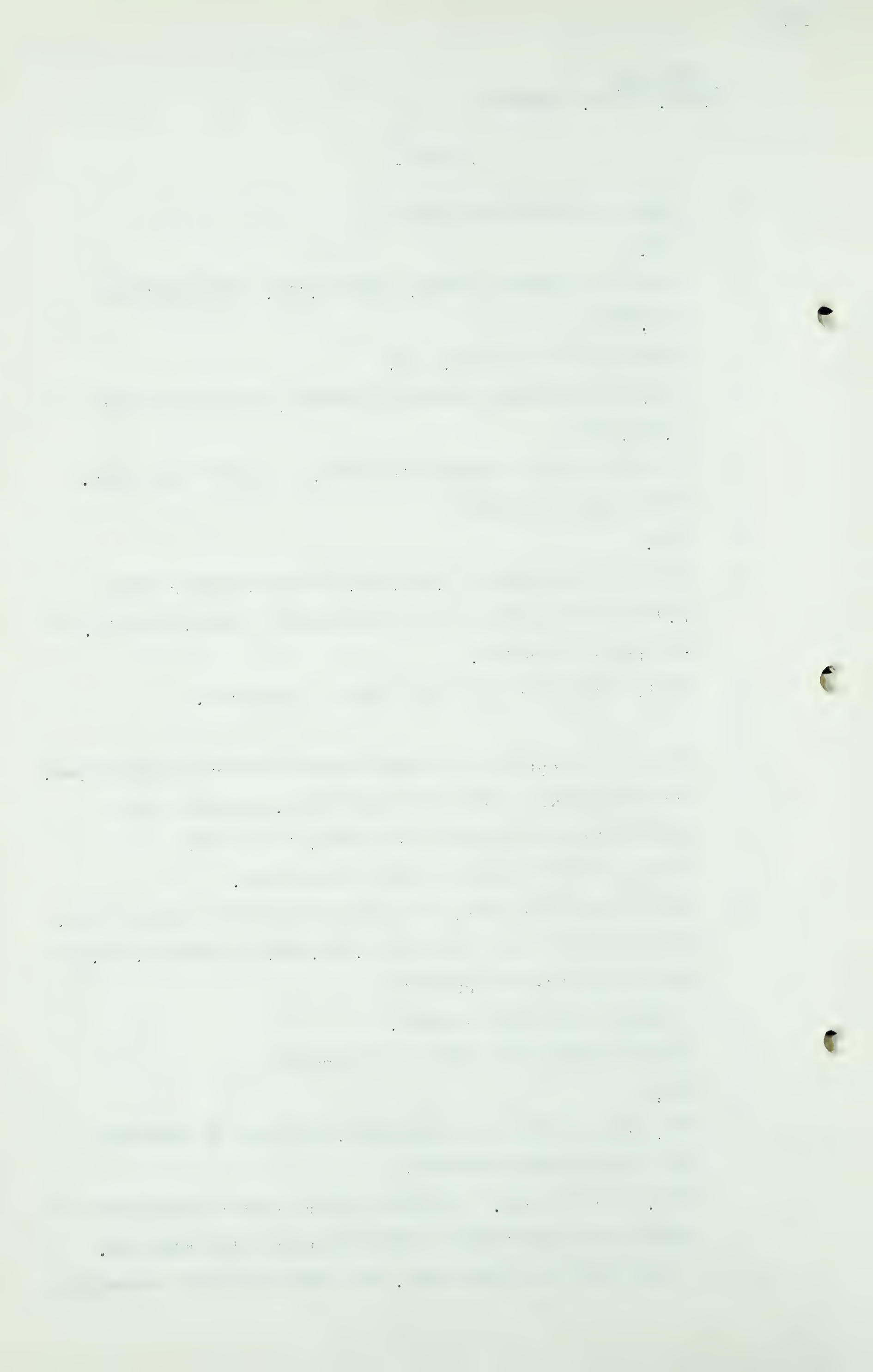
Q Those figures would seem to be correct?

A Yes.

Q And, as you told me a moment ago, you have no contracts with those power companies?

A Well, that is true. I do not believe that the Western Pipe Lines in in a position to make contracts with them yet.

A So that none have been made, and those two power companies,



G. Whitney,
Cr.Ex. by Mr. Milvain

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in Prince Albert and Saskatoon, they operate on this cheap 24-cent per million BTU lignite coal that you referred to on page 4 of Exhibit 106?

A 24 to 26-cent lignite, yes.

Q So that the only basis on which you would be able to sell gas to them is on a competitive fuel cost?

A That is true. I think that that is the basis that we would expect to sell it.

Q And seeing that they are using a cheap brand of coal, they might be difficult customers to get, don't you think so?

A No, I think not.

Q Now, if they can get coal at 24 to 30 cents per BTU, would you expect them to buy gas that would cost them more?

A No.

Q You would have to get down below those prices before you could sell the gas to them, or to obtain them?

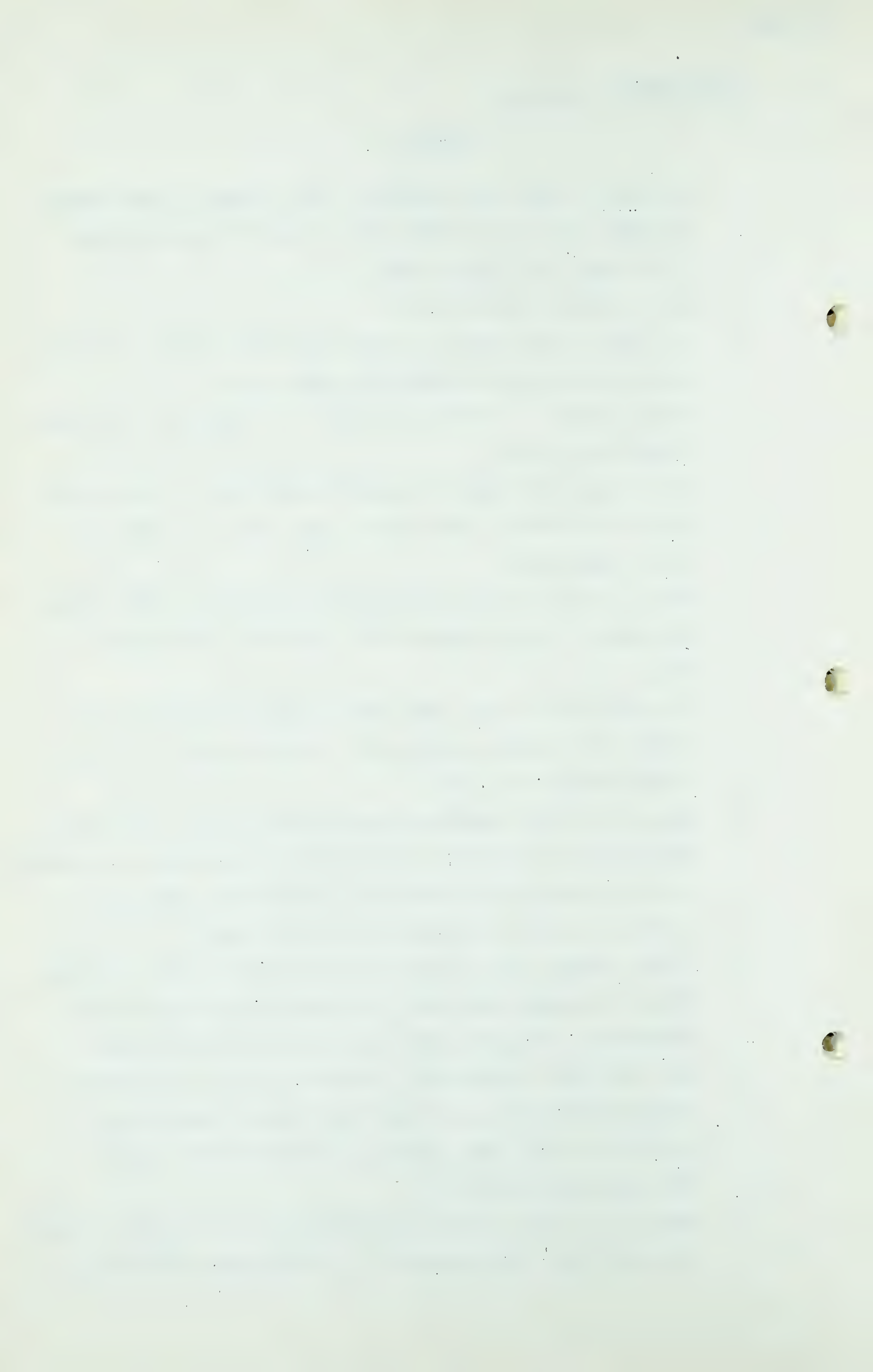
A I would expect so, yes.

Q Now, if you were unable to retain them in view of the high percentage of the total sales going to interruptible customers on that line, the line would not be feasible, would it?

A I have not stated it from that point of view.

Q If the figures that I gave to you are correct, let us assume that in the sixth year that your total sales on that whole lateral are 4,655,800, and that the interruptible sales are 2,780,200, assuming that to be so, and if you lost the interruptible sales, you would only have a remainder of 1,875,600 on the line, unless you increased your other customers, isn't that so?

A Well, if you cut off the load anywhere on the system, I think you would have to recalculate it, showing the economics.



G. Whitney,
Cr. Ex. by Mr. Milvain

- 2997 -

- Q And if in the fifth year your total sales on that lateral were only 1,875,000, it would not be feasible, would it?
- A I would not say without further study.
- Q What is that?
- A I would not say without further study.
- Q You wouldn't think it would be though, would you?
- A Well, this load which you are cutting off is a low revenue-producing load. I would not be surprised but what it could be operated without it.
- Q Well, one would have to increase the price of the remainder a great deal, wouldn't you?
- A It would have to be increased some under those circumstances.
- Q Well, we will put it this way, Mr. Whitney, that if you were unable to maintain that interruptible load, you would expect that it may have some serious consequences on the economics of the whole lateral?
- A I do not think there is any question about it without maintaining the interruptible load.
- Q Even without the interruptible sales, or the amount involved in the interruptible sales?
- A No, I said that I do not believe there is any question that we cannot make those interruptible sales.
- Q Well, let us assume that you cannot, then it would not be feasible from an economic point of view to run that lateral?
- A No, I wouldn't say that.
- Q You wouldn't say that?
- A No.
- Q Would you go this far with me and say that it would create serious economic problems, at least?
- A I do not know how serious they would be.

G. Whitney,
Cr. Ex. by Mr. Milvain

- 2998 -

Q Now, in view of the fact that to retain the interruptible load you would have to meet a fuel price competition, and in view of the fact that to take gas they would have to go to the expense of some conversion, wouldn't these power plants have to look into the long-range economics before making a deal with you at all?

A I think they would, yes.

Q Yes. Pretty carefully?

A I think so.

Q Yes?

A I expect our margin would be substantial enough to obtain the sales and retain them.

Q Don't you think, Mr. Whitney, that the fact is that if for some reason you could not make those sales, I mentioned here a minute ago that amount to 2,780,000, if you could not make those sales to the interruptible, that you would have to get around and sell that gas to some other customers in order to make this line work?

A No, I would not make a statement like that.

Q You would not go that far with me?

A No, sir.

Q Well, now, there is one other feature that I would like to look at for a moment with you. It is the question of these peak daily demands, and I am looking at Appendix III of Exhibit 106, and if I read that properly, the total Canadian maximum daily demand for the fifth year would be 148,400 Mcf.?

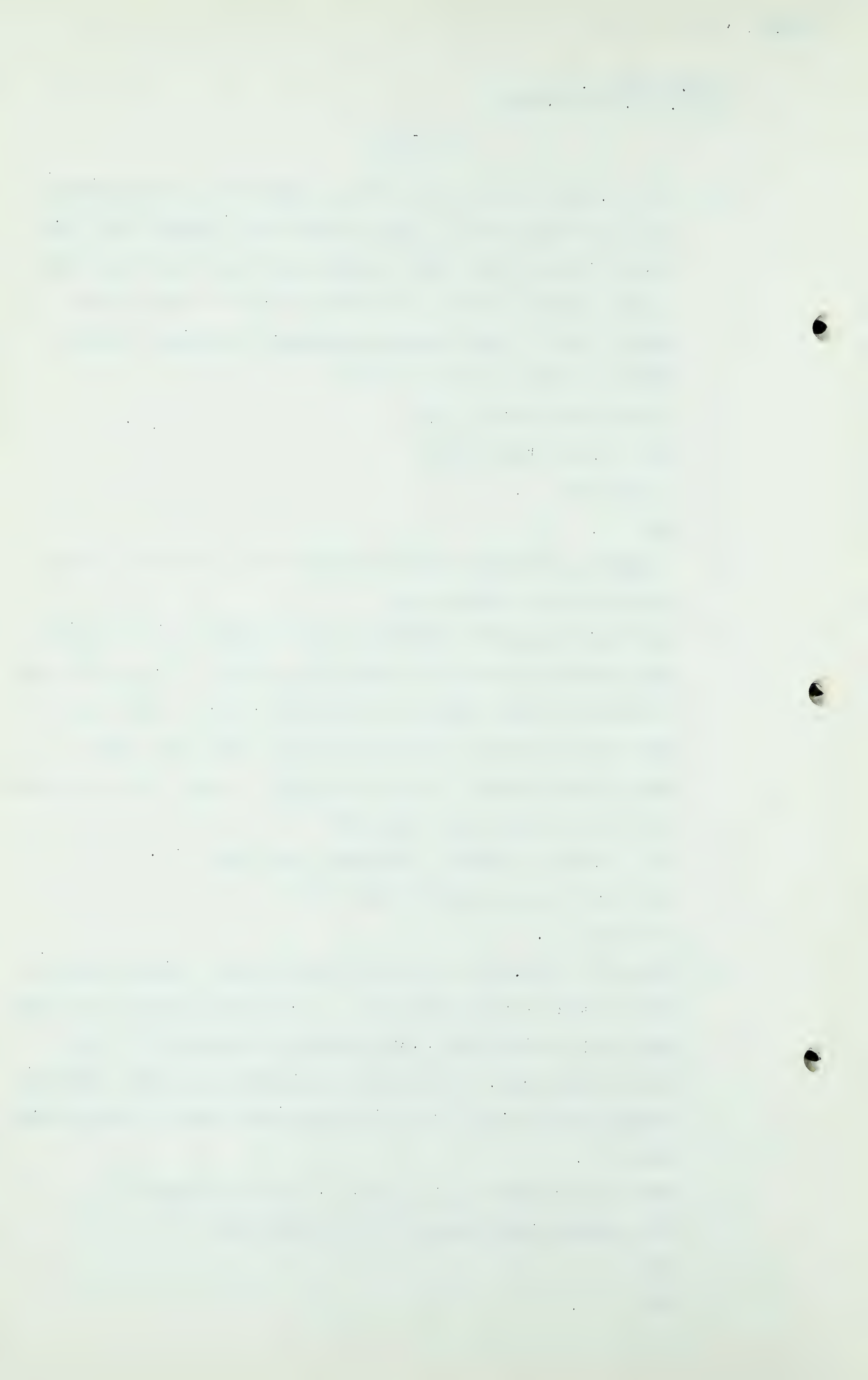
A Yes.

Q That is in column 1, 2, 3, 4, 5 - it is column 6?

A The maximum daily demand in the fifth year?

Q Yes?

A Yes.



Jordan Whitney.
Cr. Ex. by Mr. Milvain.

- 2999 -

Q That is correct. Now, I am looking at Appendix 2 in another exhibit that has not been filed yet called "Pipe Line Design" and you show total purchases from three different fields there amounting to 270,520, that is correct, is it not?

A If that is the figure there, I will accept it.

Q That is the figure in Appendix 2 of this exhibit not filed yet, called "Pipe Line Design". I take it that there would be involved 6,440 as fuel and line loss which appears from Appendix 4 of Exhibit 106 in the fifth year of operation. That is the last figure in the last column?

A Yes.

Q So that one would subtract that 6,440 from the 270,520 and leave 264,080 that would be then available to serve all customers?

A Yes.

Q Both Canadian and American?

A That is right, yes.

Q And the United States demand is shown throughout as being 150?

A Yes.

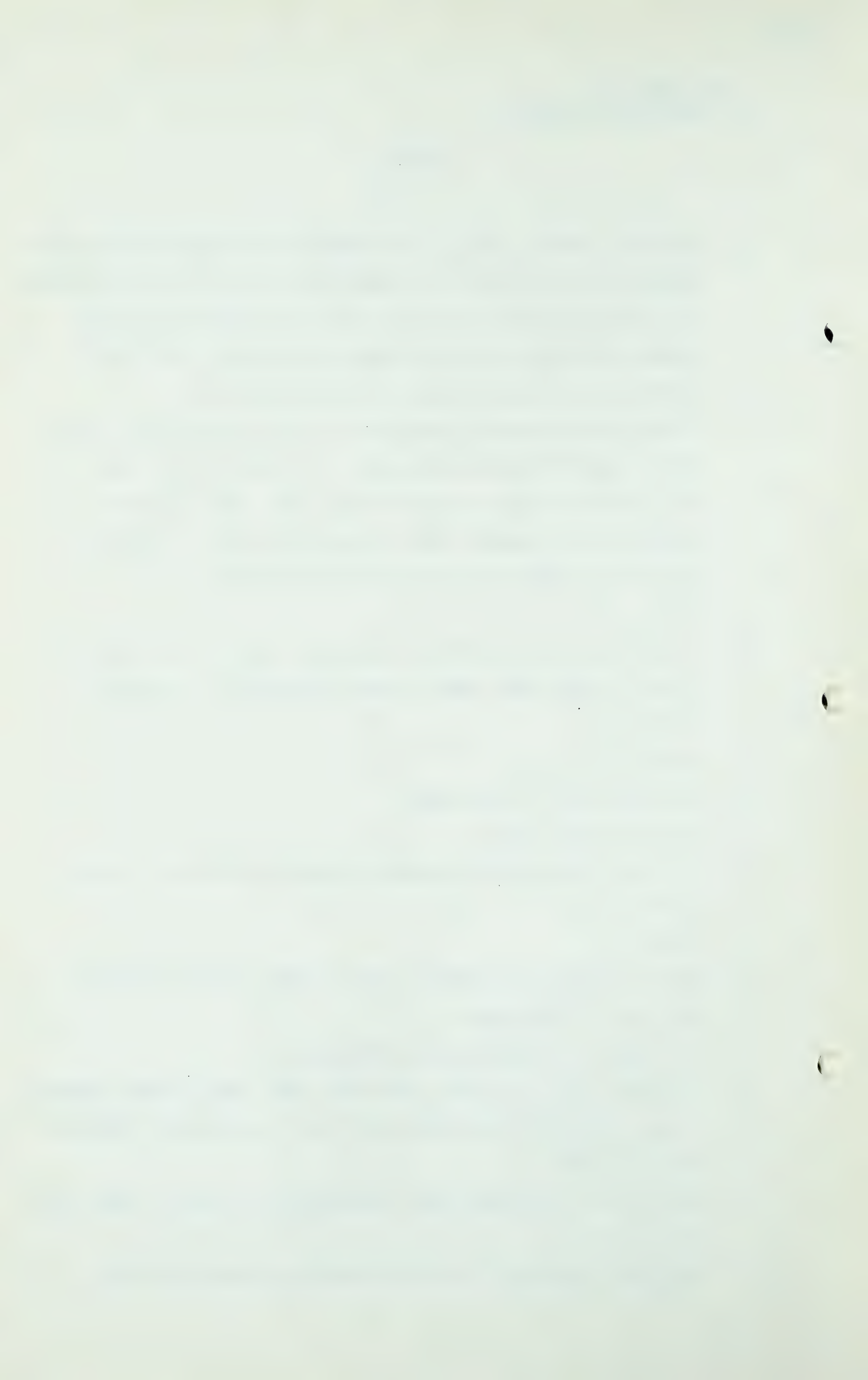
Q That is what you intend to sell to them and that leaves 104,080 of a balance?

A No, 114,080. Subtract the 150 from . . .

Q From 264, that is right, 114,080. Now this, I would suggest to you, would be the amount that is left then for Canadian use, 114,080?

A That is the estimated peak day sales at the end of the fifth year.

Q You have previously shown the Canadian demand as being



Gordon Whitney,
Cr. Ex. by Mr. Milvain.

- 3000 -

148,400. I have not made a note of where I took that from.

A That is the figure that appears on Appendix 3.

Q That is right. And there is an apparent shortage there of 34,320.

A Well, this Appendix 3 represents the total demand of all customers including interruptible customers, which, of course, are to be cut back during the days of maximum firm commitment demand, and the difference between the 148,400 and the 114,080 is taken from the interruptible customers.

Q So that you would only balance that off by interrupting the customers?

A Interrupting those three interruptible customers.

Q So the three interruptible customers are the ones who are going to have to make up the shortage?

A It is not a shortage.

Q There would be a shortage if you are going to meet everybody's requirements.

A These customers are interruptible.

Q They are interruptible by contract, but not interruptible by need, in fact. In other words, if you had the gas to supply them they would probably take it, is not that the idea?

A Sure.

Q But in order to meet the general demand of your system, you have to interrupt some customers, and these interruptible customers in Saskatchewan are the ones that will probably make up that deficiency?

A I do not call it a deficiency. It is just a question of selling them some gas when you have the capacity to deliver

Gordon Whitney,
Cr. Ex. by Mr. Milvain.

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it to them.

Q That is right, but you are short to that extent of being able to meet what they would like to use if they are using your gas, is that the idea?

A If they wanted to use it on peak days and are willing to pay for it on a firm basis, I have no doubt that we would provide the capacity.

Q You would have to have additional gas supplies beyond that contemplated by your application?

A I presume so.

Q Now, there is just one other thing I would like to speak to you about for a moment and that is this question of this contract. I still do not understand the picture. As I understand it you disagreed flatly with Mr. Macleod when he pointed out to you the provision of the contract on page 8, clause 3, and stated that in his opinion, at least, he asked whether or not it was your opinion, that this contract with Northern is for a minimum of 100 million cubic feet.

MR. MARTLAND: No, I do not think the question was put that way.

MR. MILVAIN: That is the general effect that I got of it.

A May I have the question again, please?

Q I will put the question to you myself. I say looking at the contract, page 8, clause 3, do you not agree that the contractual minimum is 100 million cubic feet per day?

A The contractual quantity is not 100 million. That is the minimum, as I understand it.

Q That is right. That is the minimum amount which Western

Gordon Whitney,
Cr. Ex. by Mr. Milvain.

- 3002 -

agrees to have available to Northern?

A Western agrees to have available for Northern the difference between their initially designed capacity, the requirement of the Canadian market, that minimum of 100 million cubic feet. It is a floor of 100 million.

Q So that perhaps we are in this position that unless there is some surplus above Canadian requirements, above 100 million cubic feet, that is to say, the Canadian requirements and then the 100 million cubic feet, and something left, you are not required to deliver any more than that amount?

MR. MARTLAND: Who would require it?

Q MR. MILVAIN: That is, Northern could not require under the contract delivery of more?

A If the Canadian requirements exceed what we have estimated. . .

Q Yes?

A . . . then Northern could not require delivery of more than 100 million.

Q Yes, I am wondering that.

A I think that would be my understanding of it.

Q Suppose that the Canadian requirements develop to a point that in order to meet them there would be less than 100 million left in the system, would you consider that Northern could insist on the terms of its contract and in consequence the Canadian consumers would not get their requirements?

A If the Canadian markets ever exceed the estimates herein, probably there would have to be some provision made for providing more capacity.

Q To put it simply, Mr. Whitney, I look at it this way, your application asks the right to remove from Alberta fields 275,000 Mcf per day, is that right?

Gordon Whitney,
Cr. Ex. by Mr. Milvain.
Cr. Ex. by Mr. S. B. Smith.

- 3003 -

A. I think that is the figure.

Q I say now let us assume for a moment that Canadian requirements are built up to a point where they need 200,000 Mcf per day, which would only leave 75, would you then consider that Northern would take the 75 or would they insist on taking the 100?

A I do not think there is any possibility that the Canadian points would contract for 200 million on an initial capacity.

Q But if they did, would it be your impression that this contract would be insisted upon and 100 million per day would be taken to meet the United States requirements and Canadian demand or requirements would be curtailed to the extent necessary to make that possible?

A I think there would have to be re-negotiation.

Q Either that or perhaps get some more gas somewhere?

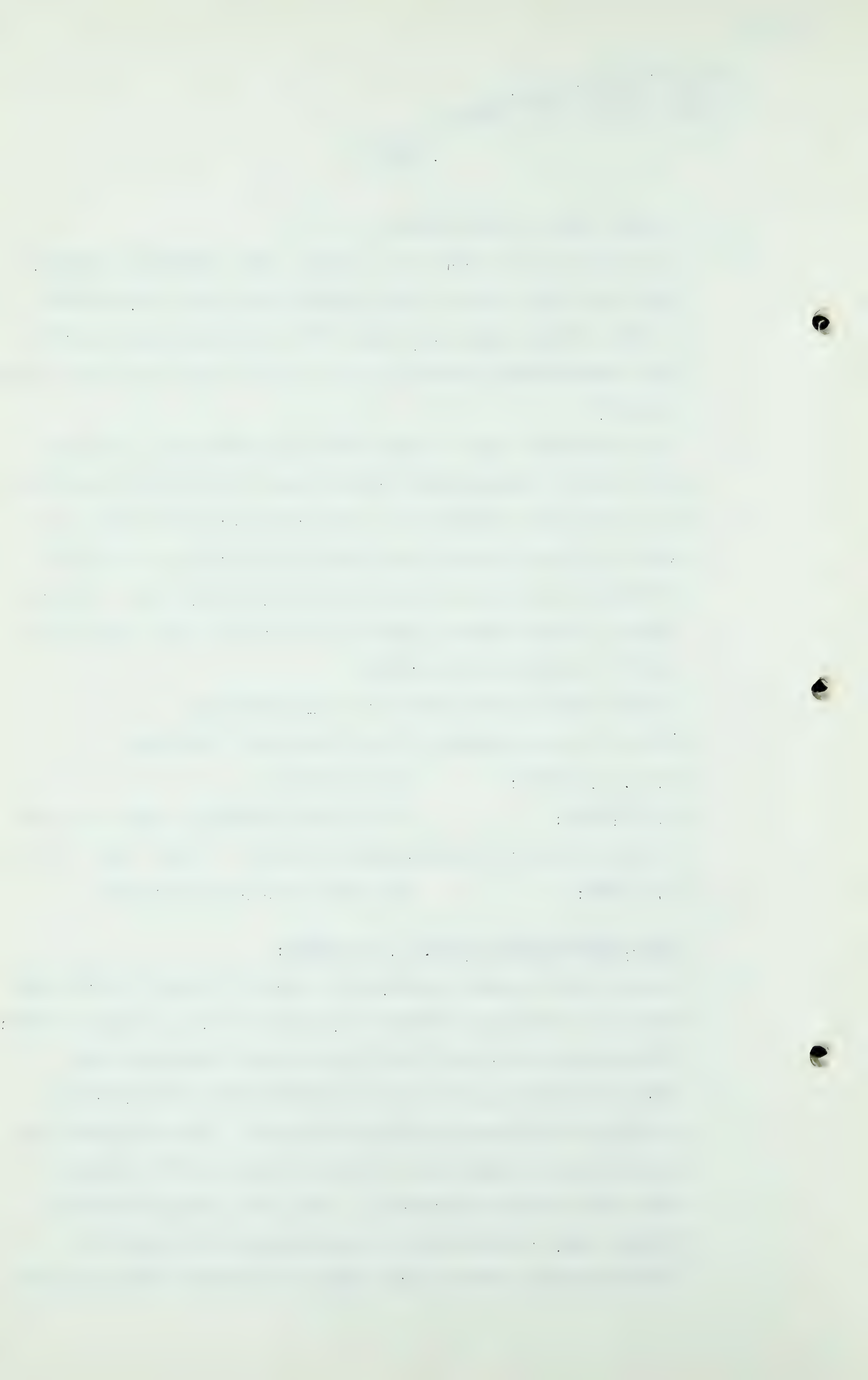
MR. C. E. SMITH: Or sue them.

MR. MILVAIN: I am afraid somebody might get sued and the people in Saskatchewan go cold. I think that is all.

MR. STEER: Not with your coal available.

CROSS-EXAMINATION BY MR. S. B. SMITH:

Q I would like to ask a question or two, if I may, Mr. Whitney. First, the contract exhibit 104, clause 2-f-7, on page 6 says: "Northern has requests from its wholesale customers for capacity increases of over 150 million cubic feet per day for 1952 from already connected markets. These requests are in addition to those that will be met by the 825 million cubic feet per day project." And I note from the exhibit 106 you say, "In addition to the delivery to be made to Canadian areas, Western Pipe Lines has entered into an agree-



Gordon Whitney,
Cr. Ex. by Mr. S. B. Smith.
Exam. by Mr. C. E. Smith.

- 3004 -

ment with Northern Natural Gas Company for the sale of 150,000 Mcf of natural gas per day at the International Boundary." That is what you take this contract to mean, is it not, because all your estimates all the way through are built up on the basis of delivering 150,000 Mcf per day to Northern? I think every estimate I have seen is built on that basis.

A I think so.

Q You are expressing your understanding of the arrangements when you say Western has entered into an agreement for the sale of 150,000 Mcf per day?

A I think that is right.

Q And then you agree if you have any more gas you will sell them that too, is that right?

A I think there is a clause in here to the effect . . .

Q Yes, page 9, clause 4.

A If any excess capacity is available for export to the United States, Northern will have first chance.

Q First call, and then you agree, Northern agrees, to enter into a contract under Clause 7 up to a maximum of 250 million cubic feet per day, that is right, is it not?

A That is what I read.

EXAMINATION BY MR. C. E. SMITH:

Q Mr. Whitney, during the course of your work in this matter, have you interviewed Mr. J. W. Tomlinson, the General Manager of the Saskatchewan Power Corporation?

A I have been at meetings at which he has attended.

Q That is sufficient. Can you say that he is, or the people he represents are, familiar with the plan of Western, particu-

Gordon Whitney,
Exam. by Mr. C. E. Smith.

- 3005 -

larly with regard to Saskatchewan?

A I think they are familiar with it, yes.

Q And would that include your Western idea of serving the two Saskatchewan Power Corporation plants at Saskatoon and Prince Albert, as well as Regina Power Plant?

A I am sure they are aware our estimates include those figures.

Q And may I go one step further, and I won't repeat everything that Mr. Milvain has said, but would their knowledge also include anything with respect to the price which they might be expected to pay at Saskatoon and Prince Albert, having particular regard to their power plant?

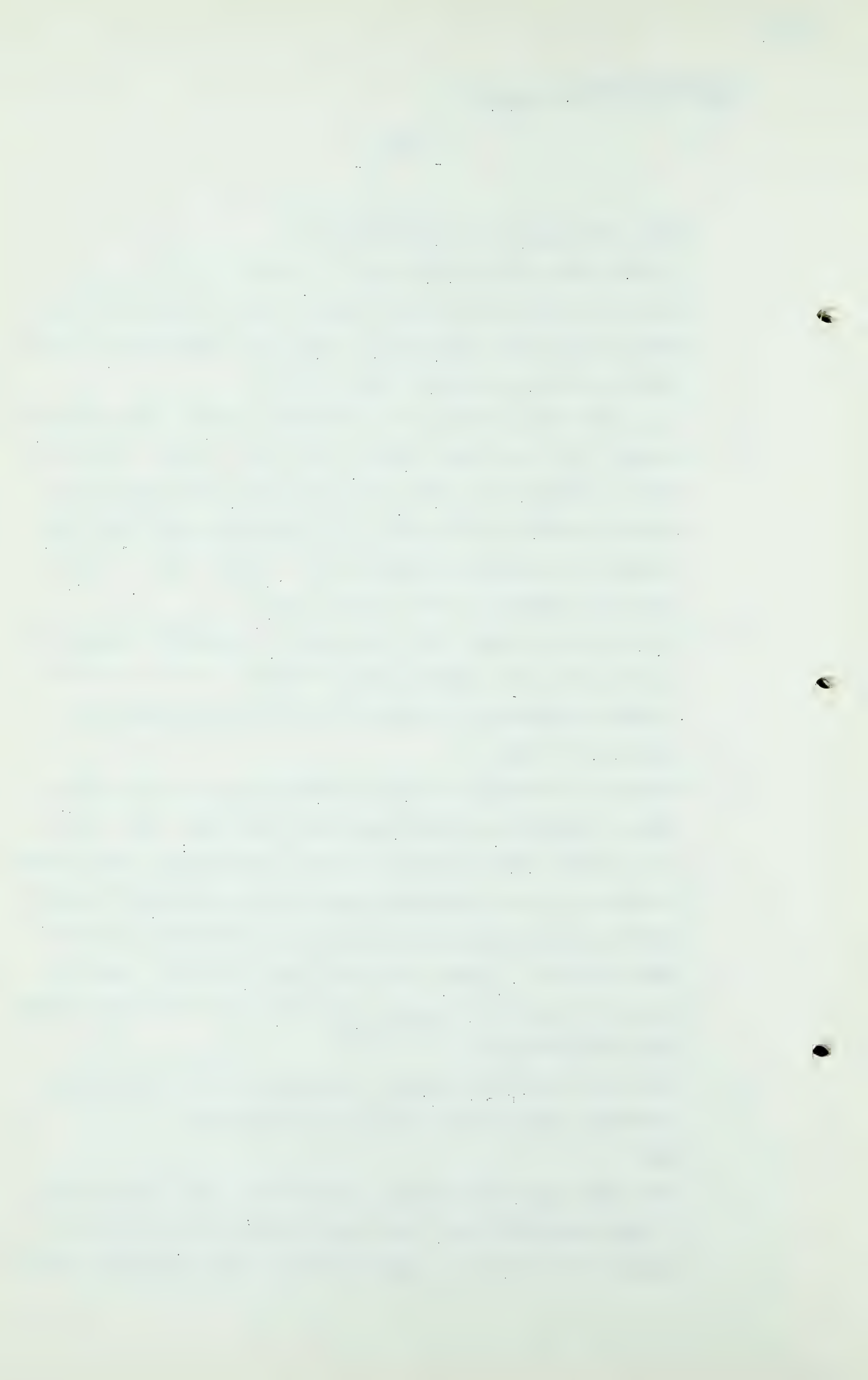
A No, as far as I know there have been no specific discussions on any price. Our reason for including it in the estimate is that we think we can obtain the load by underselling competitive fuels.

Q Subject to somebody stopping me with regard to the strict rules of evidence, I am going to ask you this: Was there a discussion with Tomlinson or any of his people with respect to whether or not you people would be in a position to substitute gas for their coal at Saskatoon and Prince Albert power plants? I mean, sitting around the table, was that situation discussed between your people and the Saskatchewan Power Corporation?

A Not in any specific detail. I talked to Mr. Cole, who is the Power Superintendent under Mr. Tomlinson.

Q Yes?

A Just generally discussed the possibility, and I think that he went along with the idea that it would be possible to replace the fuel if we could undersell the competitive fuels.



Gordon Whitney,
Exam. by Mr. C.E. Smith.

- 3006 -

Q I realize, unfortunately, that they are not here, Mr. Whitney, although it has been suggested to them they may be sufficiently interested to be here. With that explanation, can you give us anything further with regard to your discussions with them? To begin with, I take it no question of price they are paying for their coal now was discussed with respect to the price you may be able to give them for gas?

A No, there was no discussion as to the price of gas. They were willing to furnish us with prices they were paying for fuel. They were going to furnish us that information.

Q There was no discussion of what you might do to compete with those prices?

A As far as I know, no. There have been various visits to people in Saskatchewan.

Q Have any of the gentlemen who are here had any discussions when you were present, do you know?

A I believe there have been, yes. I believe there have been meetings at which I have not been present.

Q Do you remember who they are?

A You mean, other than the ones I attended?

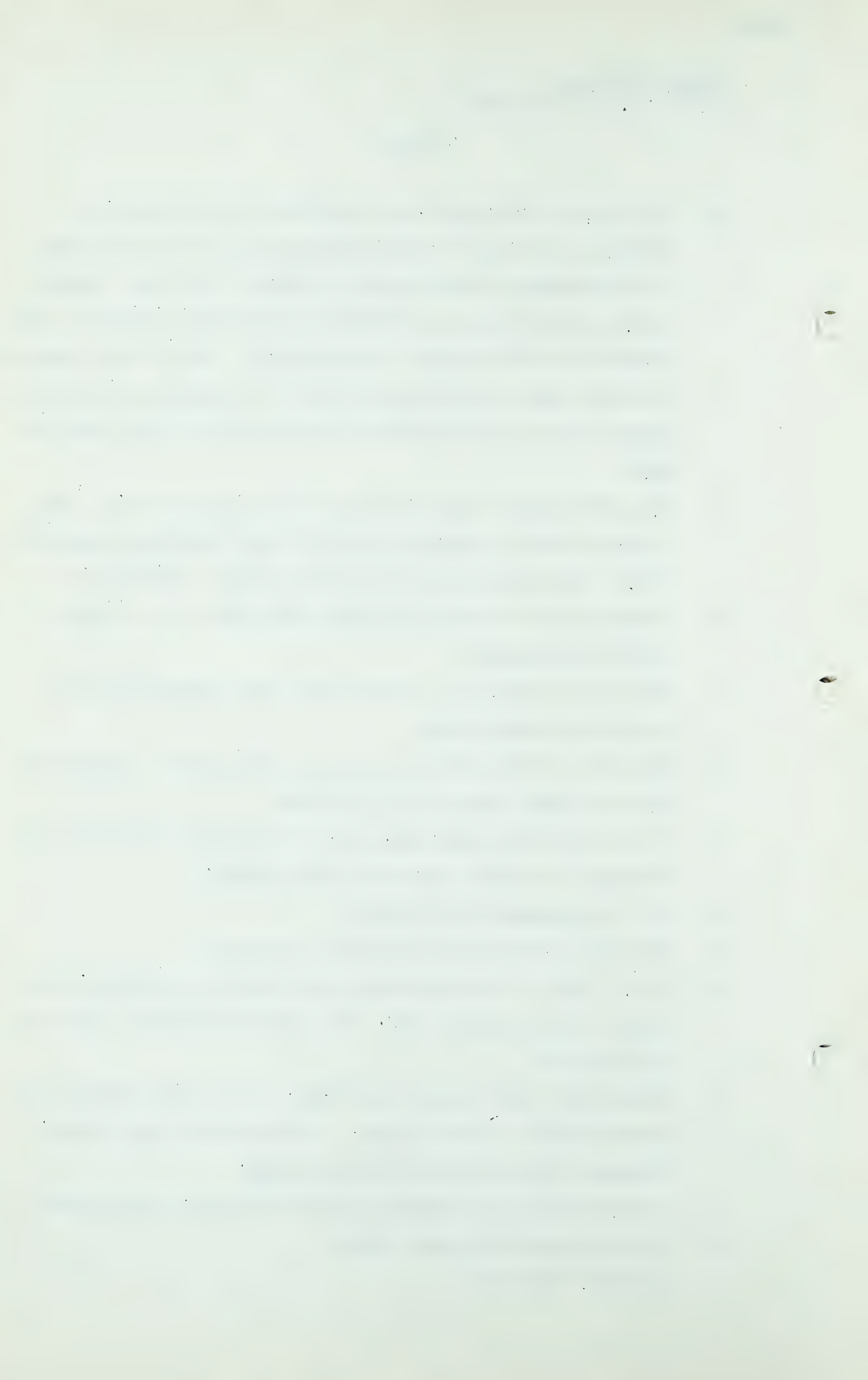
Q Yes. Maybe I had better ask each one of you in turn, that would be the simplest way. You understand what I have been getting at?

A There have been numerous meetings. I just can not say who participated in all of them. I think some of the Osler, Hammond & Nanton people spoke to them.

Q You yourself had discussions with Mr. Cole, who is what?

A I do not know his exact title.

Q And Mr. Tomlinson?



Gordon Whitney,
Exam. by Mr. C.E. Smith.

- 3007 -

A Yes.

Q But that is all you can tell us about that situation. To begin with, were there any discussions directly related to price of gas in so far as it might substitute for coal?

A Well, I would not say no discussion. Of course, they asked what it was going to cost. Western Pipe Lines was not in a position to tell them. I think they are generally familiar with the economics of the situation.

Q Well, was that discussed, the economics of the situation?

A Well, they have been shown our brief which has been submitted here.

Q That helps considerably, they have been shown your brief which has been submitted here?

A I believe they have copies of all of them.

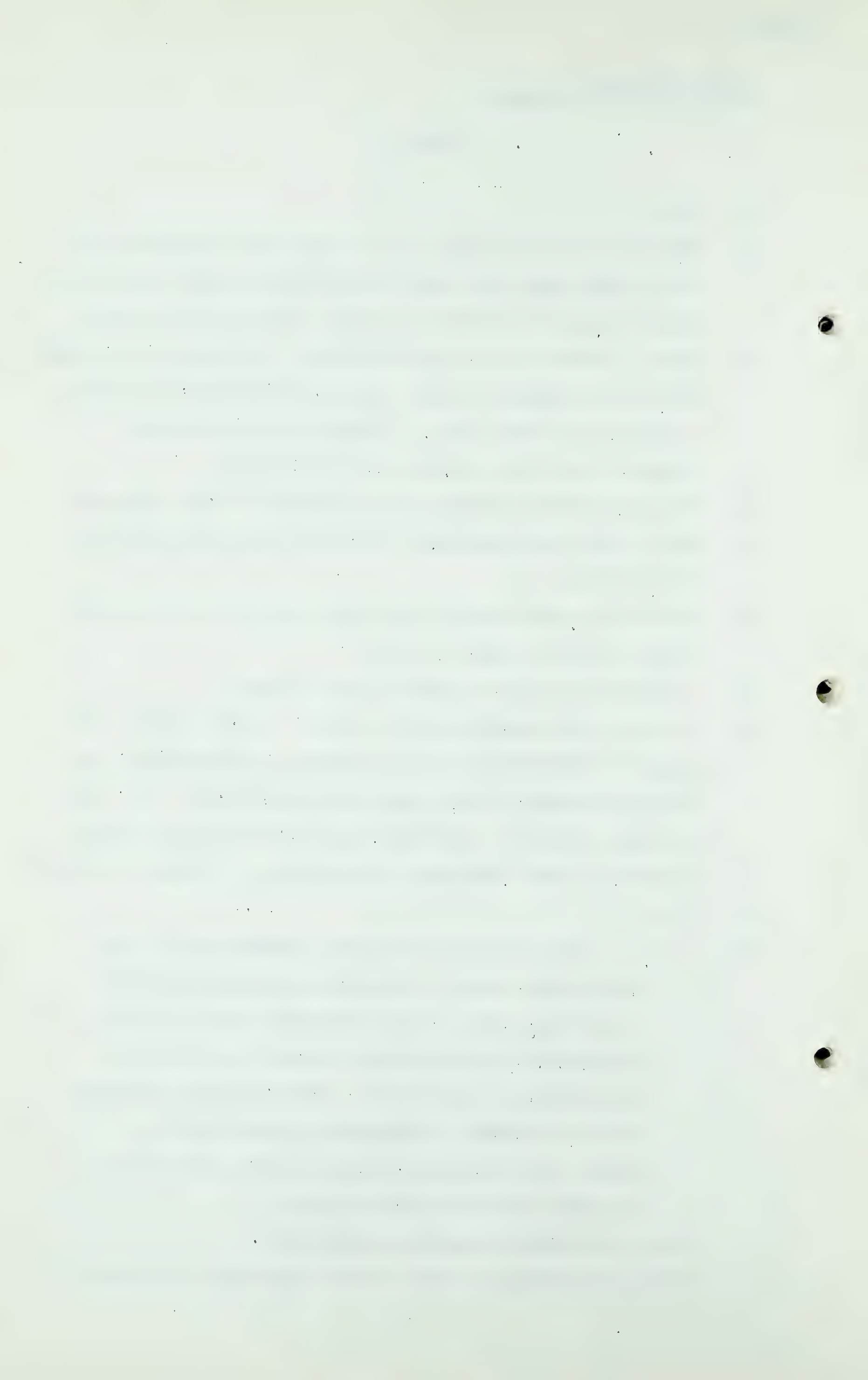
Q Just one other small question which I nearly forgot. At page 3 of Exhibit 106, your submission, Mr. Whitney, the second paragraph on the page, and particularly the second sentence thereof. Probably I had better read the first starting at the "following tabulation...." Have you got me?

A Yes.

Q " The following tabulation summarizes for the three major market areas the approximate cost of electricity for cooking and water heating and indicates the price at which natural gas would be equivalent to electricity. The comparison assumes that the thermal consumption of gas would be twice that of electricity for cooking and one and one half times for water heating."

Could you briefly expand that sentence?

A Well, in arriving at these price comparisons, we have in



Gordon Whitney,
Exam. by Mr. C.E. Smith.
Re-Ex. by Mr. Martland.

- 3008 -

effect assumed that would be half as much as electricity
for cooking.

Q That is all.

RE-EXAMINATION BY MR. MARTLAND:

MR. MARTLAND:

I have two questions, if

I may, sir.

Q Just dealing with the contract briefly, Mr. Whitney, my
friend, Mr. Smith, has referred to it and I am talking now
of Exhibit 104, and you have indicated that it requires a
minimum delivery of 100 million cubic feet per day and
provides a contractual provision then for additional amounts
which are available for export after meeting the needs of
the markets in Saskatchewan and Manitoba. Am I correct
that your 150 million figure is your estimate of what would
be delivered under the contract for the years in which you
have made your calculations?

A Yes, that is right.

Q That is the figure which you will assume it would work out
at, applying the provisions of the contract?

A Yes, based on these estimates.

MR. S.B. SMITH:

That is not what his brief
says.

MR. MARTLAND:

His brief says it. That is
the effect of it.

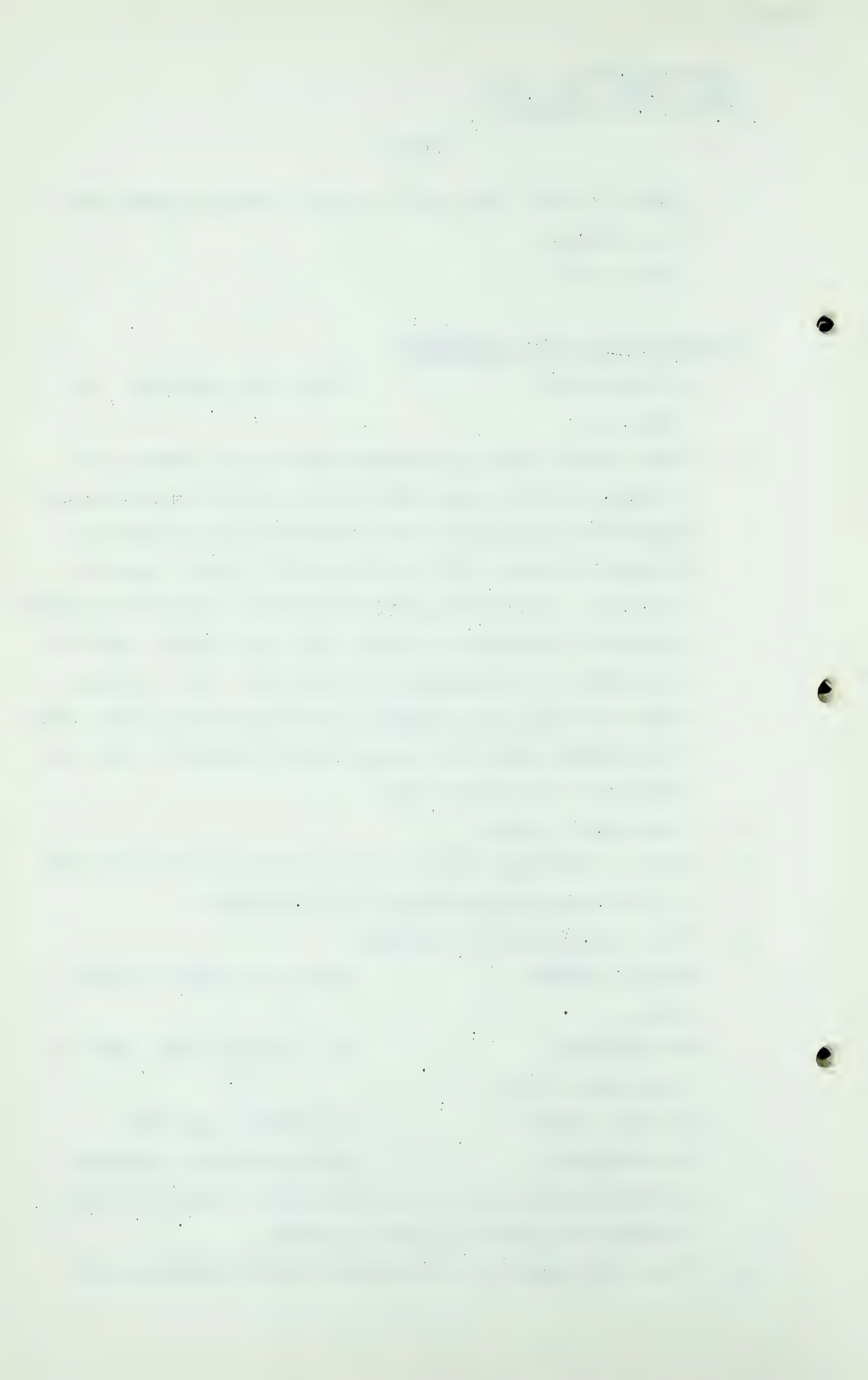
MR. S.B. SMITH:

150,000 Mcf. per day?

MR. MARTLAND:

That is what the agreement
provides on the basis of this material. That is the way
it works out and that is what he said.

Q Now, with regard to your Exhibit 106, Mr. Whitney, and



Gordon Whitney,
Re-Ex. by Mr. Martland.
Exam. by Dr. Govier.

- 3009 -

Appendix IV, it has been pointed out to you by different people questioning you that the proportion of the annual delivery which goes to Northern Natural Gas Company is larger in the first year than it is in the fifth. Why is it that proportion decreases over the five years, Mr. Whitney?

A Well, the Northern sales start at a fixed rate whereas the Canadian sales build up during the five year period.

Q Yes. Thanks very much.

THE CHAIRMAN:

That is all, thanks.

EXAMINATION BY DR. GOVIER:

Q Mr. Whitney, I have one or two question. I wonder if you would refer to page 4 where you quote the prices of industrial fuel in the Winnipeg area.

A Yes, sir.

Q I notice the price quoted for lignite is 24 to 30 cents. Could you tell me if that is the price that would be applicable to lignite laid down on the grate or in the stock pile?

A That is in the stock pile.

Q What would be a reasonable amount to add to that to get it to the burner grate?

A I really do not know. I tried to find out something about consumption of lignite in some of these plants that use it. It seems they do not keep very good statistics on what their fuel does cost them. It seems it is very cheap and they do not keep track of what it costs to get it to the grate.

Q I suppose there would be some increment to get it to the

Gordon Whitney,
Exam. by Dr. Govier.

- 3010 -

grate and some increment to dispose of ashes and dust and so on?

A I would think so.

Q Have you estimated that yourself on the basis of your other experience?

A No. I do not remember any case where we did.

Q Have you available any figures on relative combustion figures and especially of lignite, Mr. Whitney?

A No, I have not. As I say, the combustion efficiency of lignite is something I just have not been able to obtain any information on.

Q It would seem to me it would be important in comparing the competitive feature of lignite to have the combustion efficiency?

A Yes, I would think that would be an important consideration in the final determination. Actually, we anticipate that gas can undersell even the comparative price on an equal efficiency.

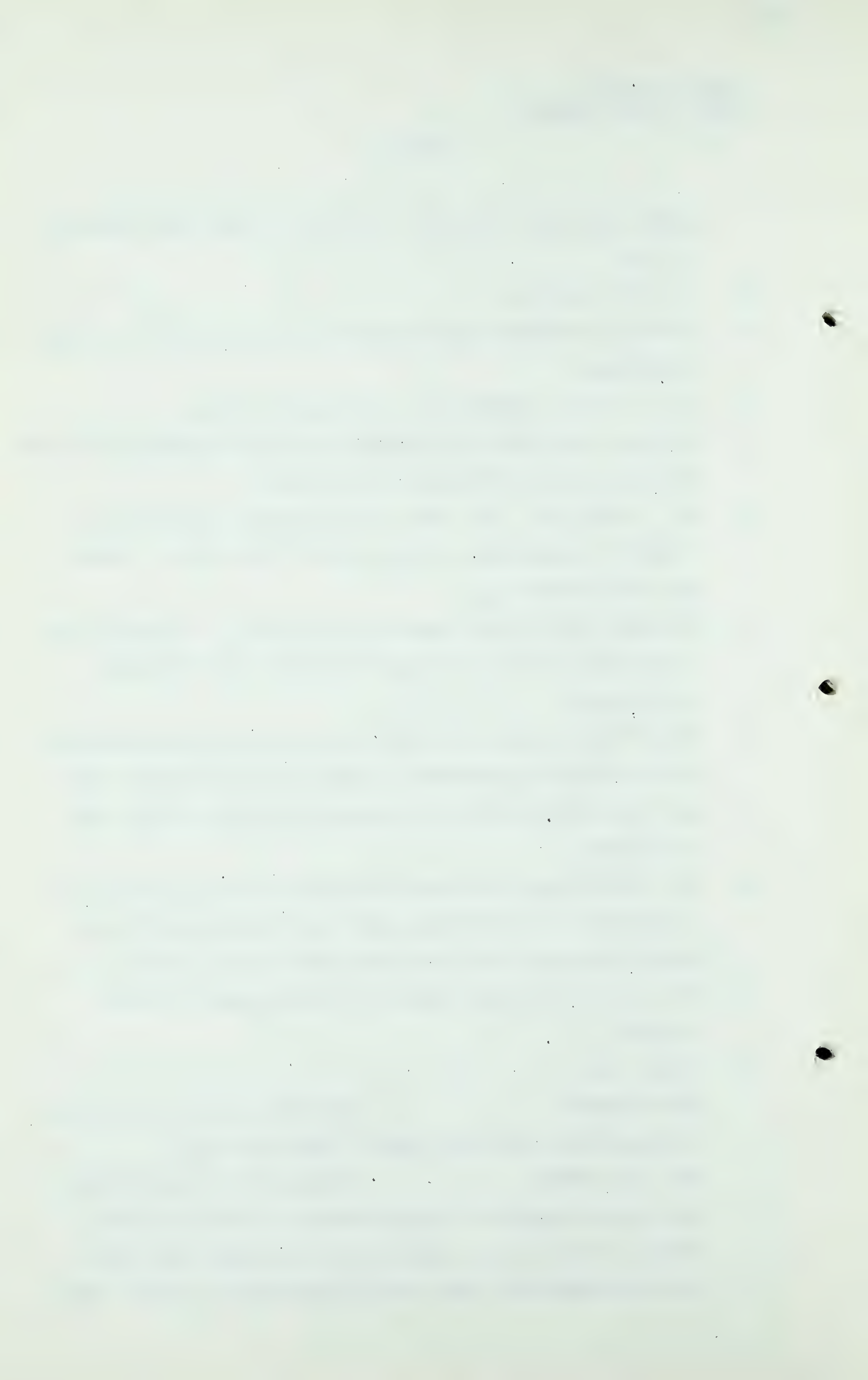
Q One other thing, you mentioned that Western is not yet in a position to say anything about prices, but has it been decided whether there will be a price zoning scheme?

A No, as far as I know, there is no rate policy in that respect.

Q Thank you.

THE CHAIRMAN: Mr. Smith, have you got some representative from the Town of Grande Prairie?

MR. C.E. SMITH: I bring to your attention, sir, this situation. Mr. Patterson, the mayor of Peace River, I think it is, spoke to me last night just after the adjournment and said that Mr. McLaughlin, M.L.A. from



Statement by J. O. Patterson,
President, Grande Prairie Chamber of Commerce.

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that district, and he were present and desired to make a statement. I could not tell him anything about whether or not that would be possible. I asked him to be here a few minutes before nine this morning. I can not give you any information as to what they intend to say or how long they will be. I told Mr. McLaughlin the matter of time had been decided by all parties concerned to be of the greatest importance now. However, it may be better, if there is no objection from counsel, that the Board might hear them if they won't be any more than ten minutes.

THE CHAIRMAN: I think we might hear them now.

MR. C.E. SMITH: I am not introducing them or anything, except to say that they are here. I do not even know what they are going to say.

J. O. PATTERSON, having been
first duly sworn, testified as follows:

Mr. Chairman and Members of the Board:

Mr. Ira McLaughlin and I have been asked by the Chamber of Commerce of the Town of Grande Prairie to make this submission to your Board, and we thank you for the opportunity of appearing before you. You will recall that a year and a half ago, when the Board was considering the export of gas from the Pouce Coupe wells in Alberta to the Town of Dawson Creek, B.C., we also intervened. It was found at that time that the ninety miles distance from the Pouce Coupe field to Grande Prairie precluded us from securing natural gas.

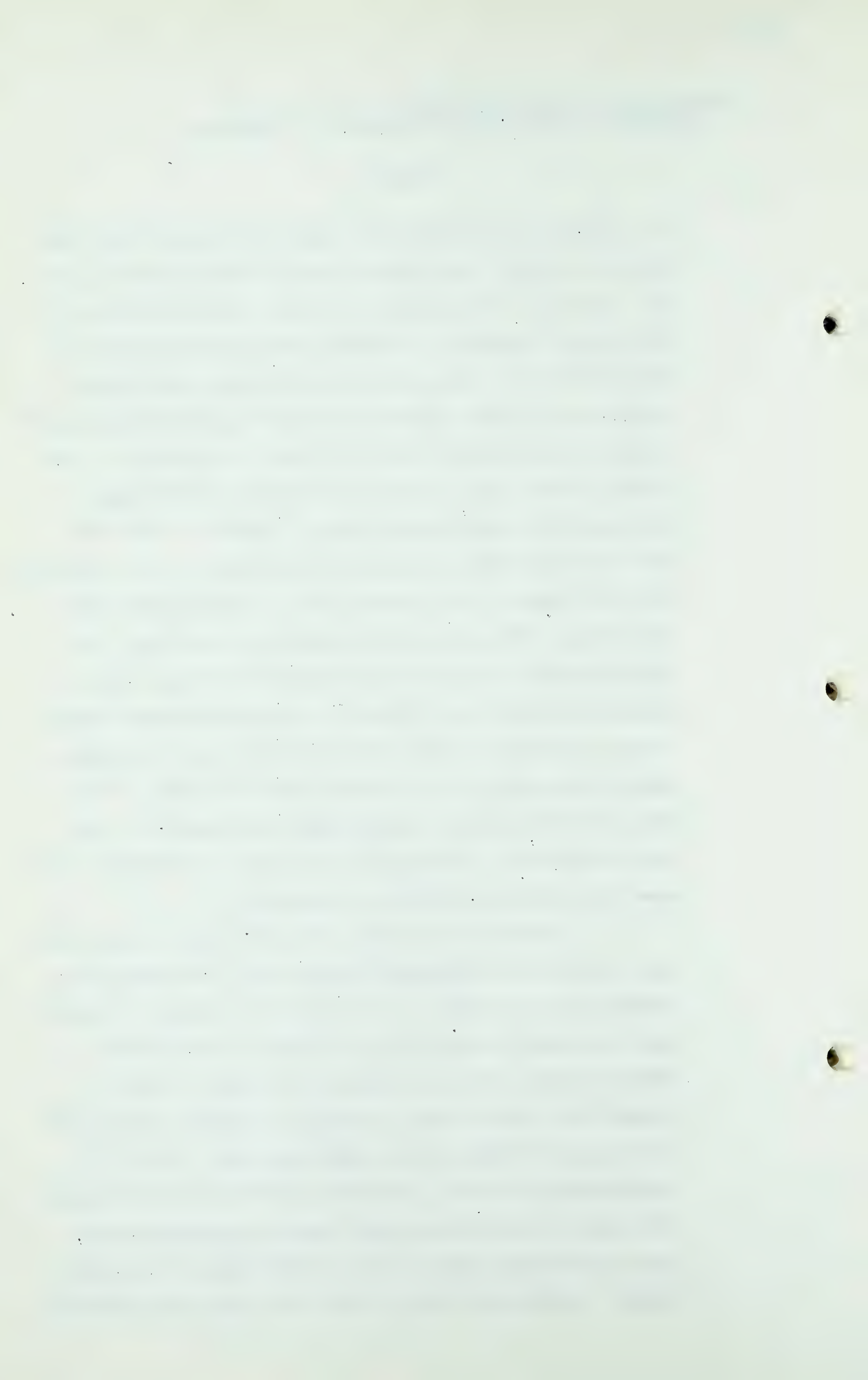
Since Dawson Creek was supplied with gas last winter we have watched with interest and a certain amount

Statement by J. O. Patterson,
President, Grande Prairie Chamber of Commerce.

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of jealousy the benefits that gas has brought that town, and we are more than ever anxious to obtain natural gas for our town. I would point out that Grande Prairie is the largest community in Alberta without natural gas so far as we know. The town is experiencing a very rapid growth and is now estimated to contain approximately 4,500 people. We would also point out that in addition to not having natural gas, we are at a further disadvantage as compared with other communities in Alberta in that the cost of other fuels is probably the highest in the Province. Coal is \$14.75 a ton, and fuel oil is approximately 22¢ per gallon. With respect to electricity supplies, we understand that the plant of Canadian Utilities Limited at Grande Prairie is anxious to obtain an adequate supply of gas in order to keep electricity rates at a minimum of cost to the people of the Peace River territory. There are, of course, other disadvantages as compared to the rest of Alberta, including the distance of the Peace River area from the main centres of population.

Because of these and other factors, we hope that your Board in its deliberations can give favourable consideration to our case. To be perfectly frank, we realize that the market which can be supplied by the Town of Grande Prairie and other communities along the way is probably not sufficient to justify a pipeline direct from existing gas fields, but we understand that one of the applicants for export, the Westcoast Transmission Company, will have its gathering system passing approximately 45 miles from Grande Prairie and has undertaken before this Board to construct a line to our Town from such gathering



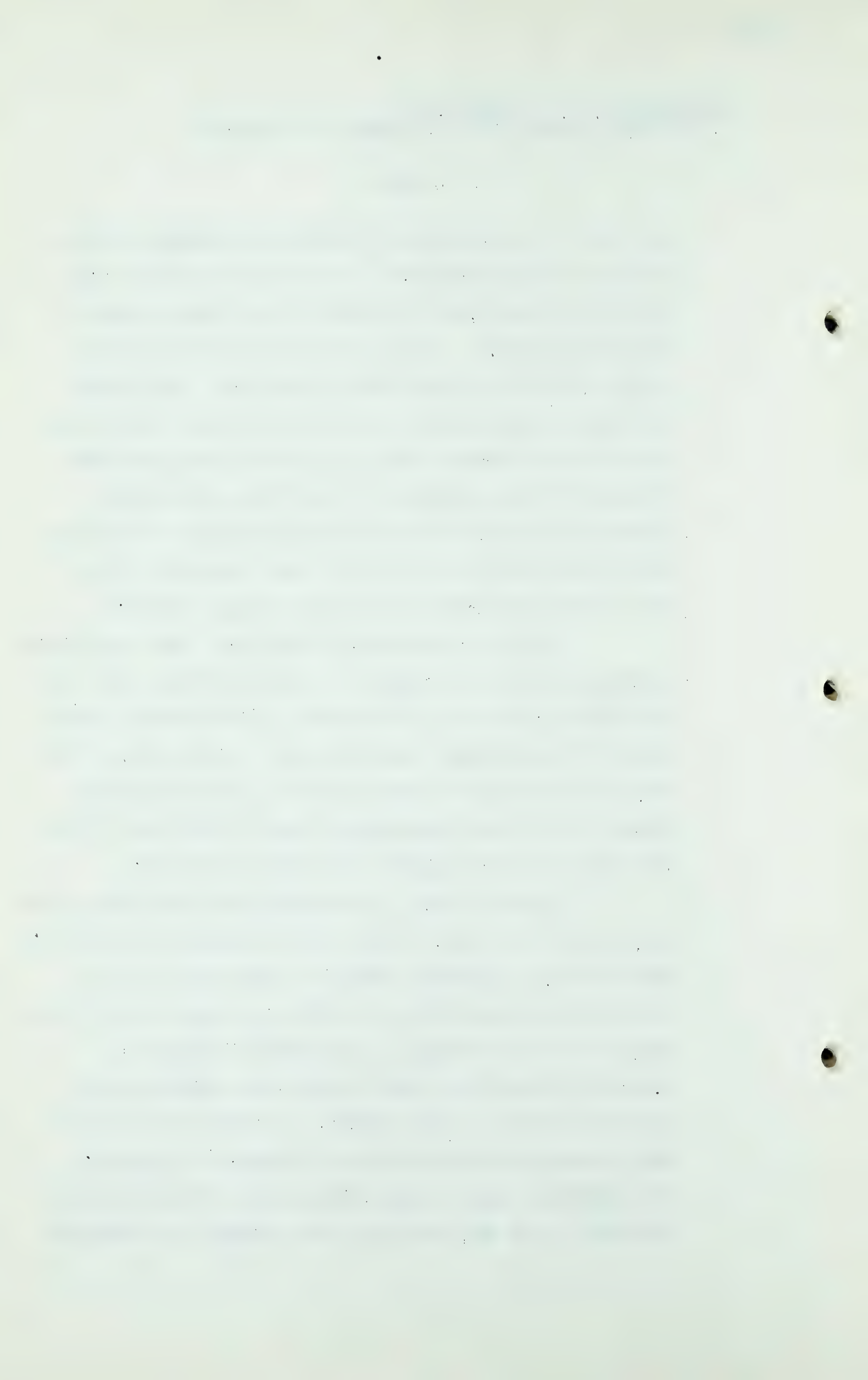
Statement by J. O. Patterson,
President, Grande Prairie Chamber of Commerce.

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system. We are therefore in the rather unique position that, as Alberta residents, we can only obtain our gas, as far as we can see, if export via the above company's line is authorized. This is also true of the various other communities in the Peace River area. Our understanding is that some 200 miles of pipeline in the Peace River area of Alberta are to be built by the Westcoast Company covering nearly all of the area and that the routes of such pipelines in following the main railroads and highways would bring nearly every populous centre and a great many farms within reach of gas supplies.

It is our submission, therefore, that conditions, insofar as gas is concerned in the Peace River area, are so different from those in the rest of the Province that special consideration should be given to the needs of our area, and that the factors insofar as gas and possible export are concerned that might apply to the rest of the Province should not apply to the Peace River area.

Export of gas, if authorized from the Peace River area, would, of course, bring other advantages to the area. We have seen, especially during the past year or so, a great deal of exploration and drilling taking place in our area, and it has brought a considerable prosperity, especially during the winter months when agricultural activity is more or less dormant. We are anxious to see this prosperity continue and to increase, if possible. We understand that a considerable amount of the present drilling is for gas, such as in the Tangent and Whitelaw



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fields and further, that it is probable if export is not authorized from the area that a substantial amount of such drilling and exploration would not continue.

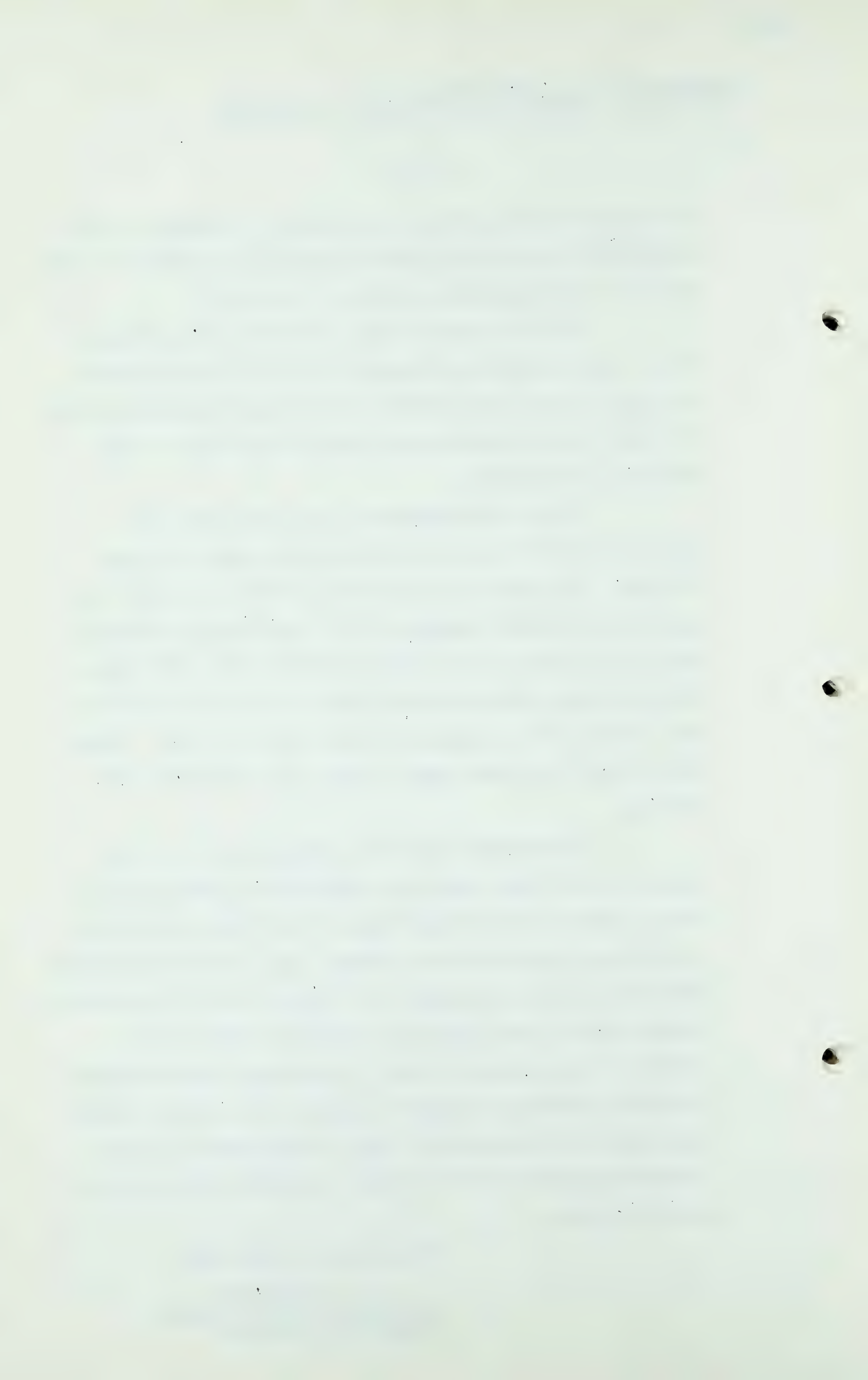
We are worried by the fact that if the Pacific Coast export markets are supplied from Southern Alberta or other sources that the Westcoast Company would not build its Peace River pipelines and that we would not be able to get gas for ourselves.

It must be remembered that other parts of Alberta have had the benefits of natural gas for almost 40 years. Now that we, in the Peace River area, have the possibility of securing gas, we are particularly anxious that the opportunity of export from the Peace River area be given every encouragement, and we hope that the Board will not see fit to postpone export from our area. Needless to say, we do not want to wait five years for gas service.

To summarize our brief submission, it is our strong request that every consideration be given by your Board to the need of Grande Prairie and other communities in the Peace River area for natural gas. We further submit that the attendant prosperity of the area that is generated by exploration, drilling and installing pipelines is greatly to be desired, in that it produces better balanced petroleum activity throughout the Province and in a small way enables the Peace River area to participate in the industrialization of the Province resulting from oil and gas production.

Respectfully submitted,

J. O. PATTERSON,
President, Grande Prairie
Chamber of Commerce.



W. L. Shomaker,
Dir. Ex. by Mr. Martland.

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MR. C.E. SMITH: Mr. McDonald should have
introduced Mr. Patterson, I think.

THE CHAIRMAN: Do any counsel wish to
question Mr. Patterson? Thanks, Mr. Patterson.

W. L. SHOMAKER, having been
first duly sworn, examined by Mr. Martland, testified as follows:

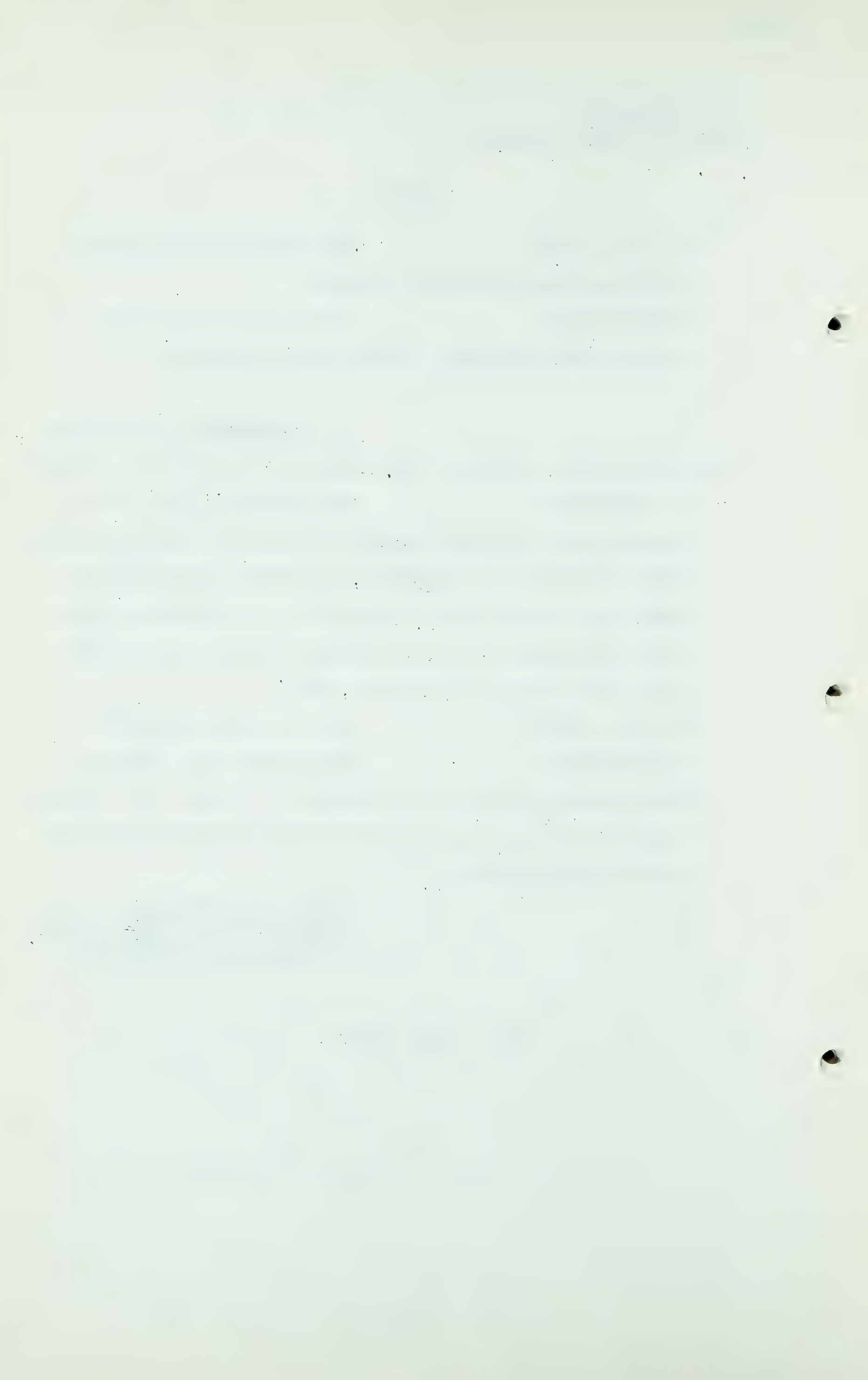
MR. MARTLAND: Mr. Shomaker, sir, will be
dealing with the exhibit which is entitled, "Survey, United
States Portion of the Market"; in respect of which there
were some revised pages, I think 2 to 5 inclusive, which
were distributed. I am tendering a revised copy of that
now to be filed as an exhibit, sir.

MR. C.E. SMITH: What is that entitled?

MR. MARTLAND: This is the one, "Survey,
United States Portion of the Market". I have, sir, revised
copies which may be more convenient to the Board than hav-
ing the loose sheets.

SUBMISSION ENTITLED
"SURVEY OF THE UNITED STATES
PORTION OF THE MARKET" PUT
IN AND MARKED EXHIBIT 107.

(Go to page 3016)



W. L. Shomaker,
Dir. Ex. by Mr. Martland

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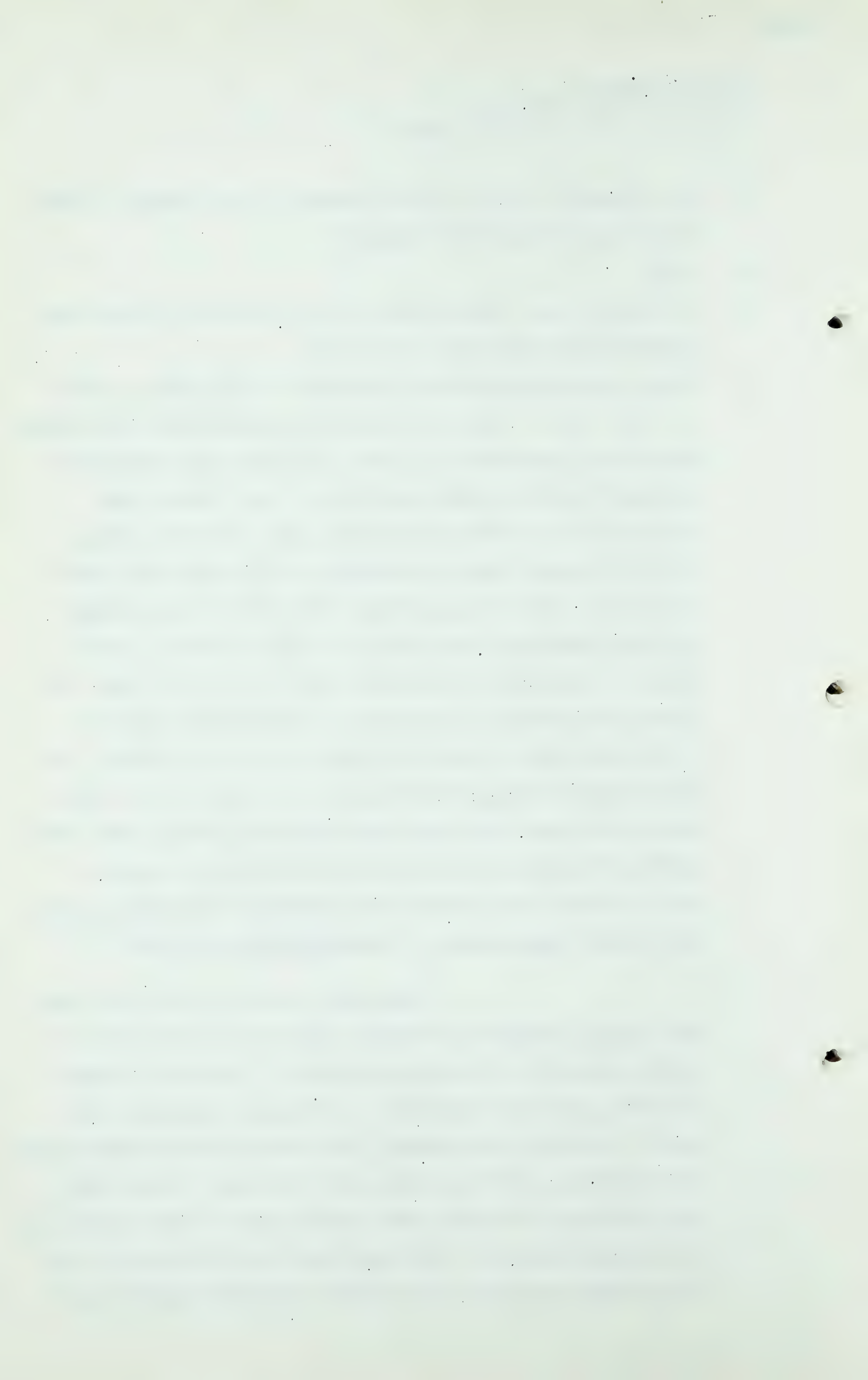
Q Mr. Shomaker, you are the Vice-President in charge of sales of Northern Natural Gas Company?

A Yes.

Q I wonder if you would outline to the Board your educational qualifications and your experience?

A After graduating from the University of Wisconsin in 1930, in early June, I went to work for Northern Natural Gas Company late in the same month of 1930, and have been continually employed by such Company until this time. During that period of time I have had several jobs, the first being that of Material man or storekeeper on the main line construction, the principal duties being that of expediting pipe and materials, and other necessary materials, with which to construct the main line pipe as well as build the necessary town border stations for measurement purposes. I held that job for about two years and took a similar job with People's Natural Gas Company, the wholly-owned subsidiary of Northern, and continued with the material work, more particularly as it referred to the distribution system, with regard to the building and stocking of materials necessary for the maintenance of the distribution systems.

I held that job for about a year and then became an agent of People's Natural Gas Company in one small community in Southern Minnesota. The duty of agent, of course, was quite general. It was the checking of all parts, selling of appliances, the installation and maintenance of appliances, reading meters, and the like. I held that job for about a year and then became agent of five communities in Southern Minnesota, continued with the same general type of work and two years later became District Superintendent



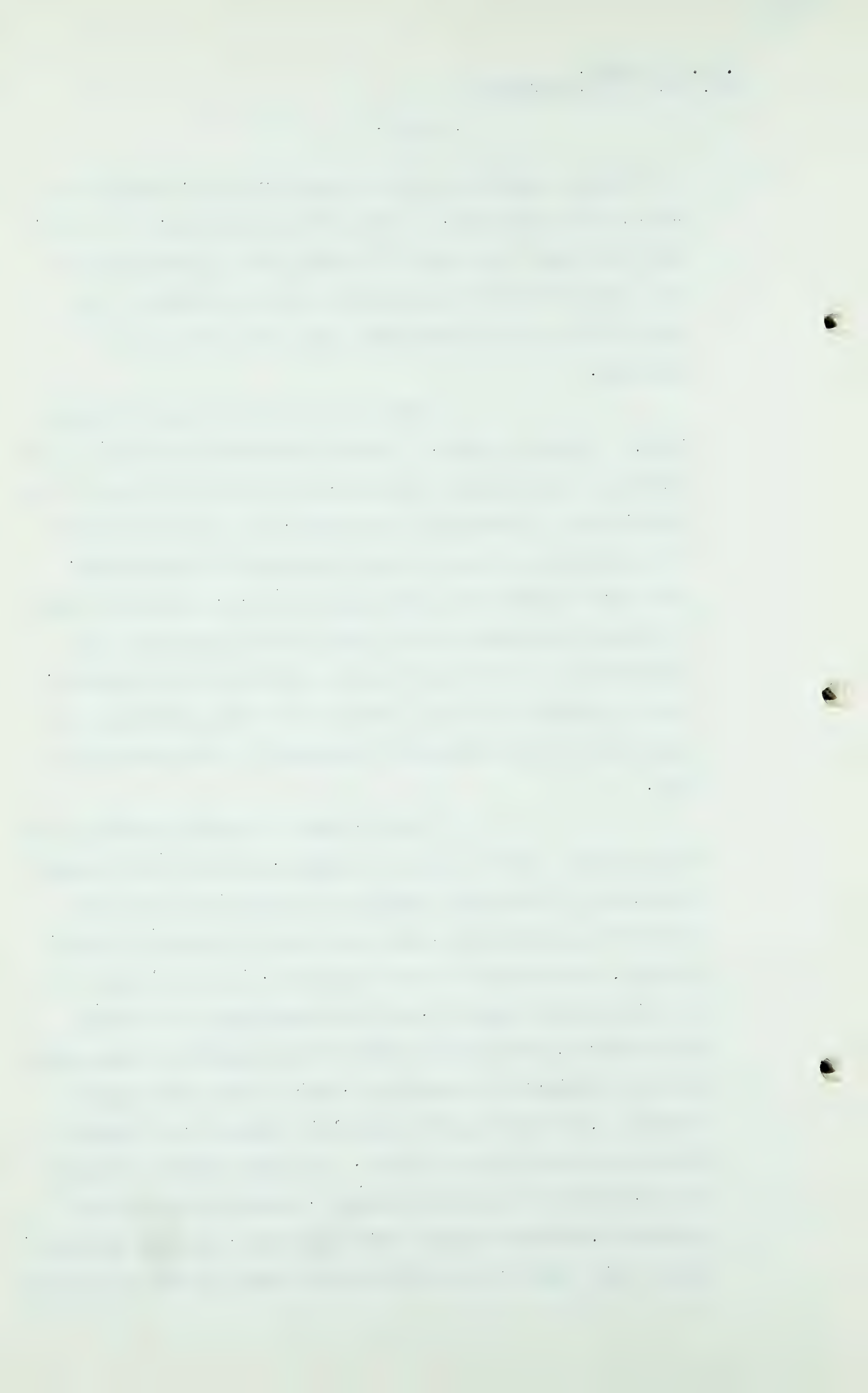
W. L. Shomaker,
Dir. Ex. by Mr. Martland

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of fifteen communities in Southern Minnesota, which comprised three agencies. That work was broader, of course, than the agent work, and it entailed the supervision of the communities and the operation and maintenance and the selling of appliances and gas solicitation of new business.

Then after holding that job until 1939, I believe it was, I became Industrial Engineer of the Company. As Industrial Engineer, my duties were that of the solicitation of industrial business, the supervision and the application of gas-burning equipment to appliances, more particularly the large power boilers, additional help to our gas utilities in the State of Minnesota for the solicitation of new large volume and industrial business, and the aiding of the gas utilities in the application of appliances and gas-designed equipment for the burning of gas.

Then in 1944, I became Superintendent of Gas Sales for the entire Company, and the job as Superintendent of Gas Sales entailed the negotiation of all gas service agreements, with the then 30 gas utility companies, the promotion of new business, the supervision of the industrial engineer, and the development of studies of research, more particularly as they applied to gas sales, and the designing of estimates, that is used for budget purposes, the working with the rate engineer, and matters dealing with the form of rate. And then in 1950 I became Vice-President in charge of Sales, broadening my duties somewhat, encompassing the rate engineer, and more particularly with regard to the form of the rate and the development



W. L. Shomaker,
Dir. Ex. by Mr. Martland

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of public reliance and the like.

Q As you have indicated, you have had experience in the preparation of market estimates and sales estimates?

A Yes.

Q A considerable amount of it?

A Yes.

Q Have you testified before the Federal Power Commission in that connection?

A Yes.

Q On different occasions?

A Yes.

Q And did you prepare this exhibit, which is now marked as Exhibit 107, "Survey of the United States Portion of the Market"?

A It was prepared under my supervision.

Q Yes. I wonder now if you would deal with that exhibit, and in starting, as I understand it, what we might call the meat of the exhibit, is on pages 2 and 3?

A Yes, I think that is true. While the exhibit constitutes some 32 pages, I think it can be rightly stated that the intent, the primary purpose of the exhibit is embodied more particularly on pages 2 and 3 of this Exhibit, which, of course, is shown in a more or less graphic presentation in the graphs on pages 4 and 5.

Q Yes. Pages 4 and 5 contain in graphic form an illustration of the material given on pages 2 and 3?

A Yes.

Q And am I correct in understanding, and we are jumping to the back of the submission now, pages 26 to 30 inclusive, of the brief, those pages give the bases upon which your estimates

W. L. Shomaker,
Dir. Ex. by Mr. Martland

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have been prepared?

A Yes.

Q Would you proceed then to comment on pages 2 and 3 of your submission, Exhibit 107?

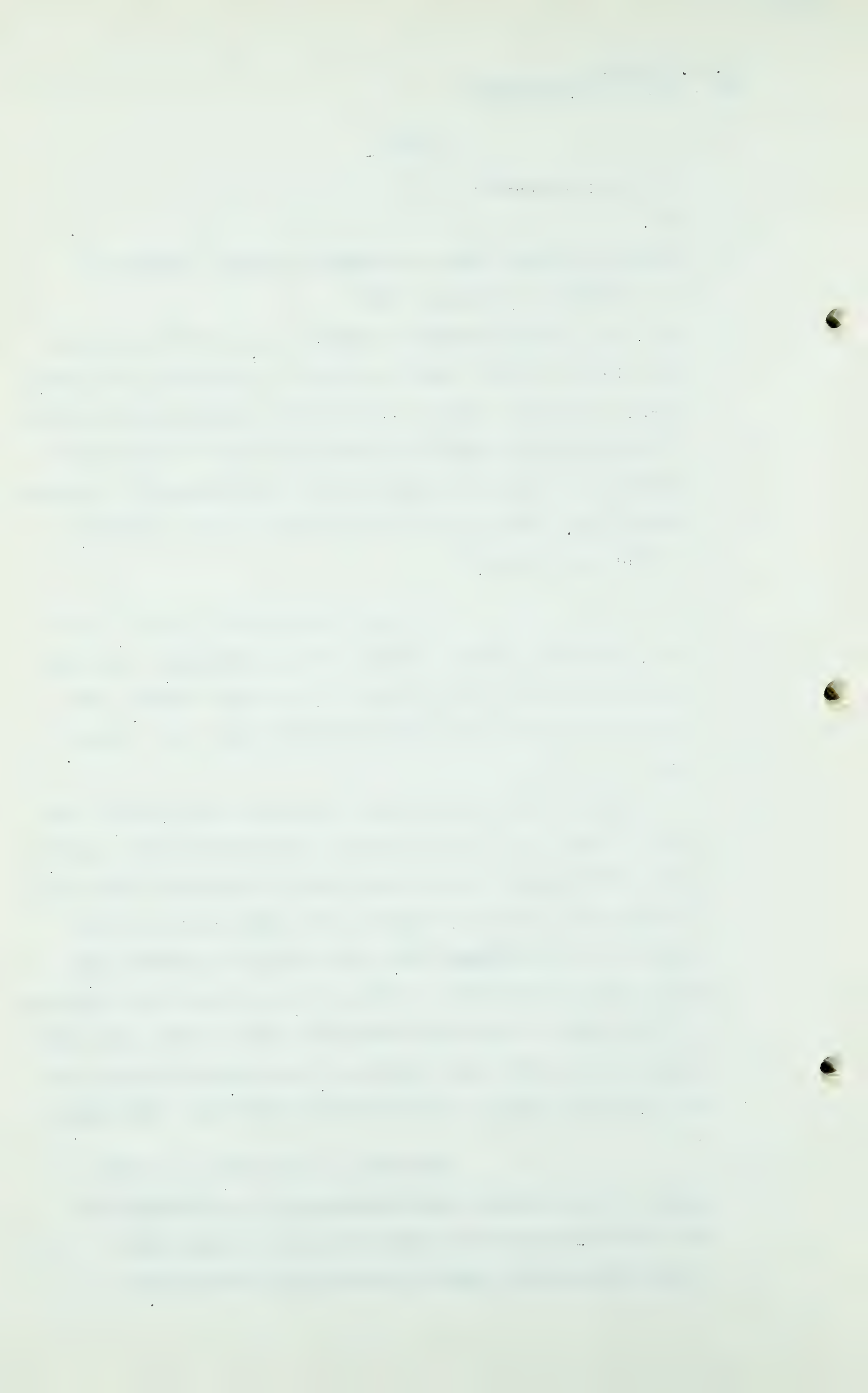
A Well, as I briefly stated a moment ago, I think the real significance of the exhibit, which is contained more particularly on pages 2 and 3, it shows the present requirements of the presently-connected communities and the estimated requirements until the year 1958 of such presently-connected communities, there being 299 communities now attached to the Northern system.

If you will notice in line 5, the lines, however, are not being shown as numbered, but under the word "total", to the right of the word "total", the first figure being 634 under "1950 Calendar Year Actual".

Q Yes?

A If you extend your eyes across the page to the right, you will note that that is the volume of maximum daily requirements for firm and small volume use of Northern's pipe line system as it extends throughout the years as notated on page 2 from 1950 through 1958, 1950 being at present 634, that being the millions of cubic feet, and our best estimate at this time of the requirements for sale of firm and small volume used in 1958 will represent 1,140,000,000 cubic feet per day, with regard to the presently-connected 229 units.

The rest of the Table, as shown on page 2, deals further with the potential requirements of the presently-connected communities as it deals more particularly with regard to the large volume sales.



W. L. Shomaker,
Dir. Ex. by Mr. Martland

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If you will read your total potential requirements in line 9, commencing with 873 under the column "1950 Calendar Year Actual", and extend to the right, you will note that the figure of 1,825,000,000 is shown under the column "1958". The difference between the figure of 1,825 which I have just read, and the figure above it in line 5 of 1,140,000,000, is the Company use and unaccounted for gas, and the curtailment of gas that we expect to have in the year 1958. I think the only real purpose of the figure 1,825 is merely to show the full potential requirements of our presently-connected communities.

Q And with regard to the word "curtailment", would you just expand on that a bit, Mr. Shomaker?

A Yes. You will note in the column "1950 Calendar Year Actual" there is 189 million cubic feet per day and extends to the year 1958 in the amount of 529 million cubic feet per day. That amount of curtailment is determined by the calculation of the amount of firm and small volume requirements and adding, coincidental to such requirements, the large volume requirements, and being unable to, of course, deliver more than what the firm and small volume requirements, which is shown in line 5, as Northern was building its pipe line capacity for firm and small volume only, and it will show the difference of 529 million in the year 1958 as the amount of curtailment that would be necessary for us to take from our system on the maximum daily requirements when the requests of 1,140,000 Mcf. are required.

Q And is that an indication of the volumes of additional natural gas which Northern Natural would like to acquire?

A Well, not necessarily. The figure is only in there to

W. L. Shomaker,
Dir. Ex. by Mr. Martland

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try to show the Board the vast amount of industrial and interruptible gas that is on our system on our maximum day. It, of course, very materially affects our load factor, having a large volume use in the summer time, so as to maintain a high load factor. It would not, of course, follow that we expect to build a pipe line capacity of 1,825,000,000 cubic feet per day.

Q Would you deal with page 3, Mr. Shomaker?

A Page 3 is an annual, deals more particularly with regard to the annual figures, and follows the estimates that are shown on page 2, and it shows in line 5 a total of 163,624.4 under the column "1950 Calendar Actual", and, similarly, across the page until we reach the year 1958, when 325,950,000,000 cubic feet is anticipated to be sold.

You will note that on page 2, in line 4, under the name of "Large Volume", under the title of "Large Volume", there are no large volume sales estimated to be shown on the peak day. However, in the same line 4, under the column of "Large Volume", we expect to sell a rather substantial and considerable amount of large volume load throughout the year, as indicated by the figures in line 4. The volume of 163,624,000,000, as shown under the column "1950 Calendar Year Actual", then continues across the page, as we have indicated in the various years, based on our best estimate of the amount of gas that will be sold under the maximum day of pipe line sales capacity is shown on line 5, on page 2. Likewise, on page 3, the amounts of gas as shown under Company use and unaccounted for, curtailment and potential requirements, is merely our best estimate of the amount of requirements that will

W. L. Shomaker,
Dir. Ex. by Mr. Martland.

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be shown in the years as indicated on page 3.

Q These are the estimates which you have prepared on the basis of all of the material available to your Company?

A That is correct.

Q And how have your efforts worked out in the past, Mr. Shomaker, taking, for example, with respect to Federal Power Hearings?

A Well, we have had quite a good success in this method of making estimates. I believe the figures will bear me out that in the years 1947, '48, '49 and '50, that our estimates have ranged within from approximately 2/10 of 1% to about 1%, and in all instances being on the conservative side. That is, the actual sales were greater than the estimates.

Q I take it that you have to make these estimates from time to time in connection with the actual operations of your Company?

A Yes. As a matter of fact, we maintain approximately 365 days in advance our estimates by days in order that we might have a working knowledge of what we are confronted with.

Q Yes. Now, perhaps you might comment briefly on the charts on pages 4 and 5, although you have already indicated generally what their function is?

A Well, I think the charts on pages 4 and 5 can be stated very simply in that they are a graphic presentation of line 9, the top line which is indicated on page 4 is line 9 of page 2, and the second line is line 7 of page 2, which indicates the graphic presentation of the actual 1950, and our best estimate of the amount of requests through the ensuing years of 1951 through 1958.

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The line that is shown near the bottom of the chart is merely the Company use and the unaccounted for, so that you might get a quick and rather graphic mental picture of the portions of the Company use and the unaccounted for and the curtailment, with the curtailment being the difference between the top line and the second line, as to the total requirements and the total sales on our system, and the second line being our best estimate of the sales that will be made.

Q Then with regard to the chart on page 5, it is the same thing with regard to actual sales?

A Yes.

Q And relates to page 3?

A Yes, it does.

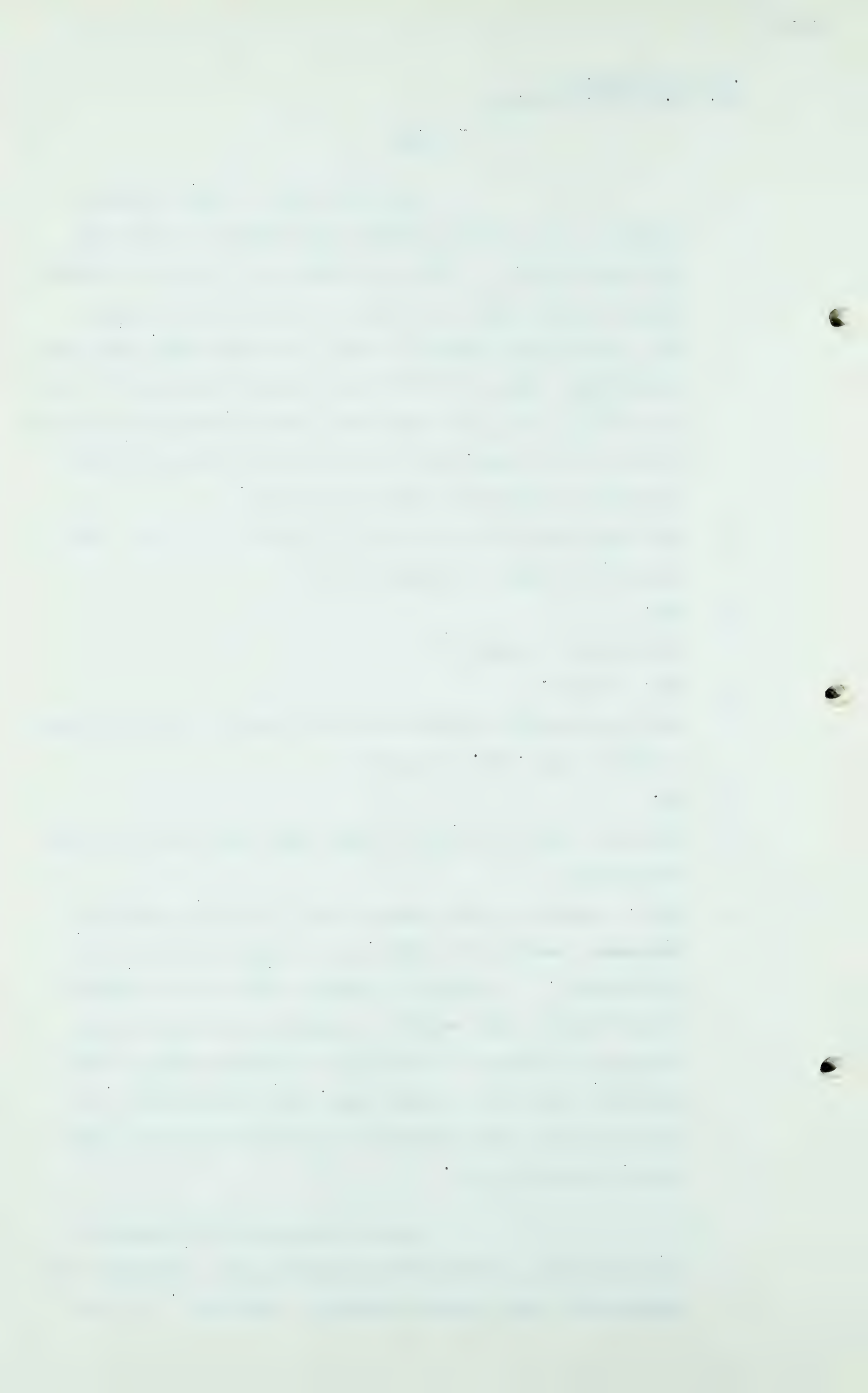
Q Have you anything further that you wish to say with regard to those pages, Mr. Shomaker?

A No.

Q Would you carry on then and highlight the balance of the submission?

A Well, I might add that pages 6 and 7 are just merely a statement, which, of course, can be read, and is self-explanatory. It deals in general with the description of our market area, which is supported by a small map on page 8, showing the location of Northern Natural Gas Company's pipe line system, and, more particularly, in the upper left hand corner as our system relates to the entire United States.

Pages 9 through 18 is merely a listing of the communities and showing the location of the communities that are now presently connected. I do not



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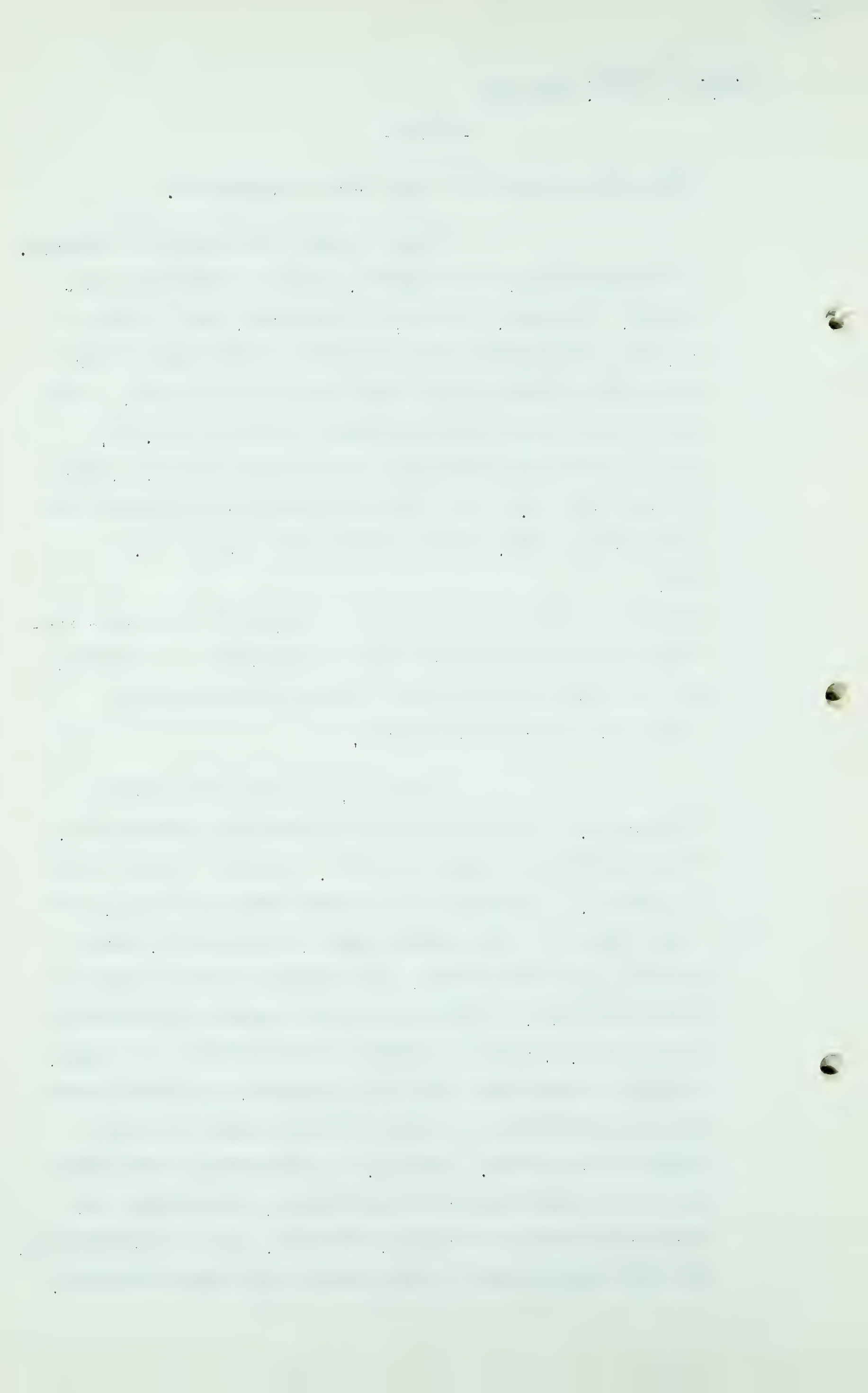
think that requires any particular explanation.

Page 19 might be touched on slightly, I do not propose, as an export, to try to forecast population. However, we have, of necessity, made a stab at it, and our estimates for the year 1951 through 1958 are predicated somewhat on the 1940 and the 1950 trend. The 1940 to 1950 trend had an average increase of 14.97%, and for the 10-year average it would have been 1.49, and we have taken 1.15 each year as a cumulative increase from 1951 through 1958, merely trending the population.

Q Yes?

A Page 20 is merely the listing of several of the larger communities in an attempt to show the 1949-1950 populations, and the increases that these larger communities have experienced during that period.

Pages 21, 22 and 23 are merely historical. I do not think they require any explanation. They are from our Company records. Perhaps I should touch on page 21. I should have included page 24 as well, when I mentioned the other pages, pages 21 through 24, being actually from our records, but perhaps I should touch on pages 21 and 24. The note as shown opposite Minneapolis and Lincoln, which is in detail at the bottom of the page, attempts to show why there is a difference, and that those amounts represent the number of meters rather than the number of customers. In 1946, the Minneapolis Gas Company and the Central Electric & Gas Company, the utility distributing company in Lincoln, Nebraska, reported information, but in a manner that it was based on the number of meters,



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these communities having both a domestic house-heating meter and a regular residential meter, and in many cases having two meters in one house.

Q I see?

A The figures, however, other than the ones shown with the star, do not represent that type of information. They are strictly with regard to the number of customers, and our estimates are based accordingly.

(Go to page 3026)

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Page 26, as you pointed out earlier, is some of the basic information that has been used in presenting the forecast on pages 2 and 3. I do not think it requires any explanation. Pages 27, 28 and 29, and 30 likewise, are attempts to reduce to writing a few of the assumptions and basic information that we have used in this forecast. Pages 31 and 32 deal with retail fuel costs and comparative fuel costs to give a mental or graphic presentation of the liquid and solid fuels as competitive with natural gas, and I might point out that we have selected Minneapolis, Des Moines, Sioux City and Omaha in that they reflect in general the geographic area in which we serve gas. It might be pointed out, however, that while the oil and coal figures as shown in these charts are obtained from information dealing with the communities as shown in the chart, that the gas line, or line at the bottom, does not represent retail sales in the communities as shown, namely the figure shown as the cost of natural gas for heating in each graph is an average of house heating rates in the area surrounding each city, and while it shows between 30 and 40 cents, I believe that for the house heating the average rate throughout this pipe line system will be 42 cents and 72 cents, that is the lowest and the highest.

Q You mentioned earlier, Mr. Shomaker, and your exhibit indicates that these deal with the potential gas requirements for the 229 communities now being served?

A Yes.

Q Is there a potential market for natural gas beyond those communities which are presently being served by the Northern Natural Gas Company system?

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Dir. Ex. by Mr. Martland.

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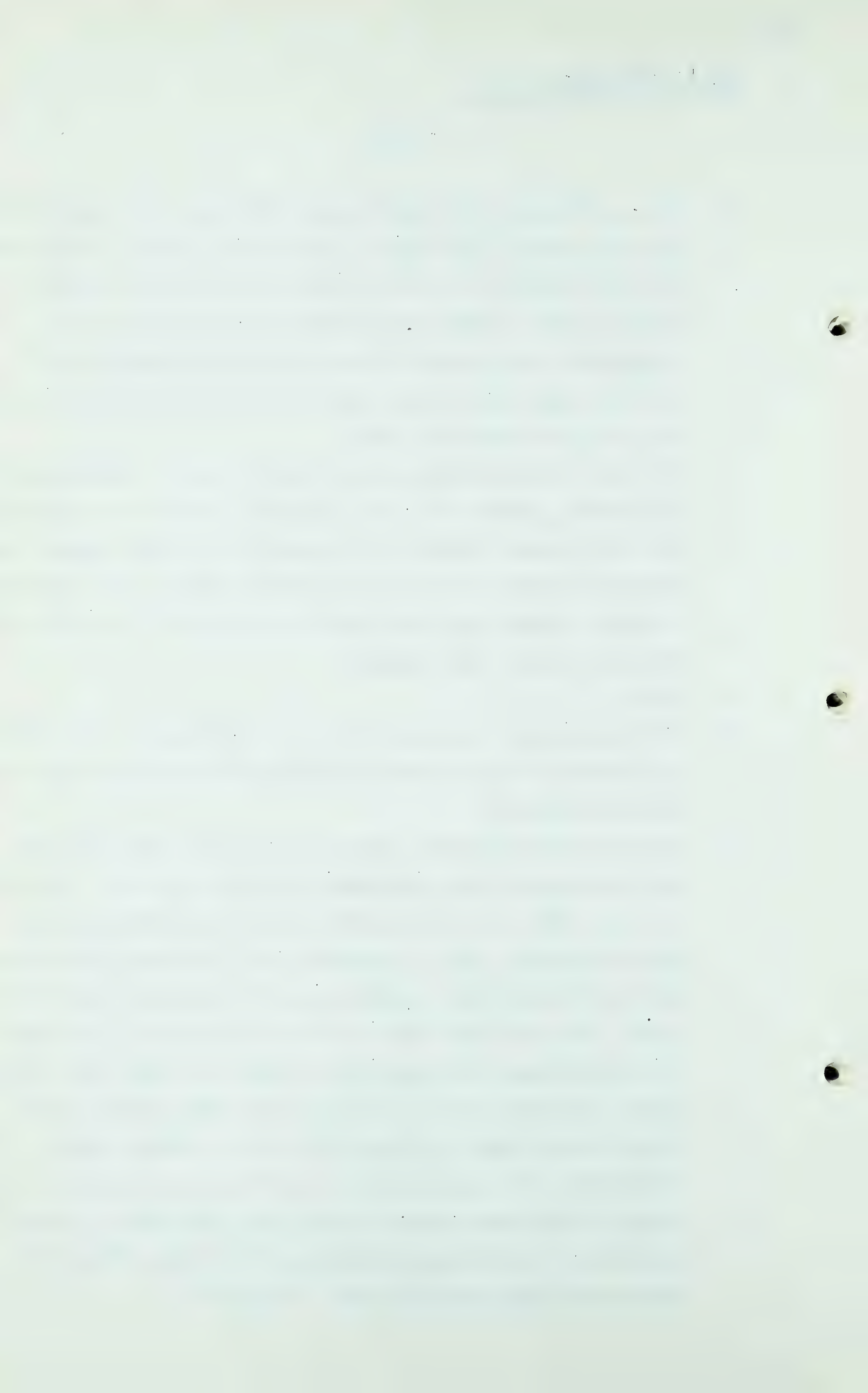
A Yes, we have on file applications from some 300 communities not now served, that desire a natural gas service, which lie for the most part in what we like to consider our general market area. We have made preliminary studies of those communities which would indicate that there would be 500 million cubic feet per day required for the new communities. It could run higher than that.

Q And just one more thing, there has been put in evidence here as exhibit, exhibit 104, the agreement between this applicant and the Northern Natural Gas Company, and it has already been pointed out that a price has not been fixed in that agreement. I assume thought has been given to the matter of price to the Northern Natural Gas Company?

A Yes.

Q I wonder if you would give us some comments as to the thinking of Northern in that regard, realizing that no price has as yet been determined?

A Northern has made such a study and it is our best estimate that having only such information, we have made our own cost studies, that is a cost service study, and predicated upon such information that if Northern could purchase from Western at the International Boundary line, at somewhere about 27.8 cents, then we could take in the gas at the end of our pipe line system near Minneapolis at an extra 10 cents which would bring the total cost to Northern at the Minneapolis end of their line at about 38 cents. And if the Federal Power Commission will, as they have in other cases, request us to harrow in its inter-company costs with this that is already invested, it would mean an increase of 2 cents a thousand. Predicated upon the 1950 volume of business.



W. L. Shomaker,
Cr. Ex. by Mr. Nolan.
Exam. by Mr. C. E. Smith.

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CROSS-EXAMINATION BY MR. NOLAN:

Q In exhibit 107, Mr. Shomaker, at page 2, you are forecasting the maximum day potential requirements?

A Yes.

Q You have that before you?

A Yes.

Q Is that predicated upon a coincidental peak in each of these 229 communities?

A Yes.

Q Have you ever known that to happen, Mr. Shomaker?

A Well, it is not likely that it will happen because as pointed out in my direct testimony I estimated that the volume of the gas and of the estimated firm small volume would be, if occurring coincidentally, that volume as indicated in the line total potential requirements.

Q And that is the basis upon which you have made this forecast?

A Yes.

Q I was going to ask you one thing. In the map included in your exhibit 107 there have been no extensions in a northerly direction, so far as that map is concerned, Mr. Shomaker?

A No, sir.

Q The terminus is Minneapolis?

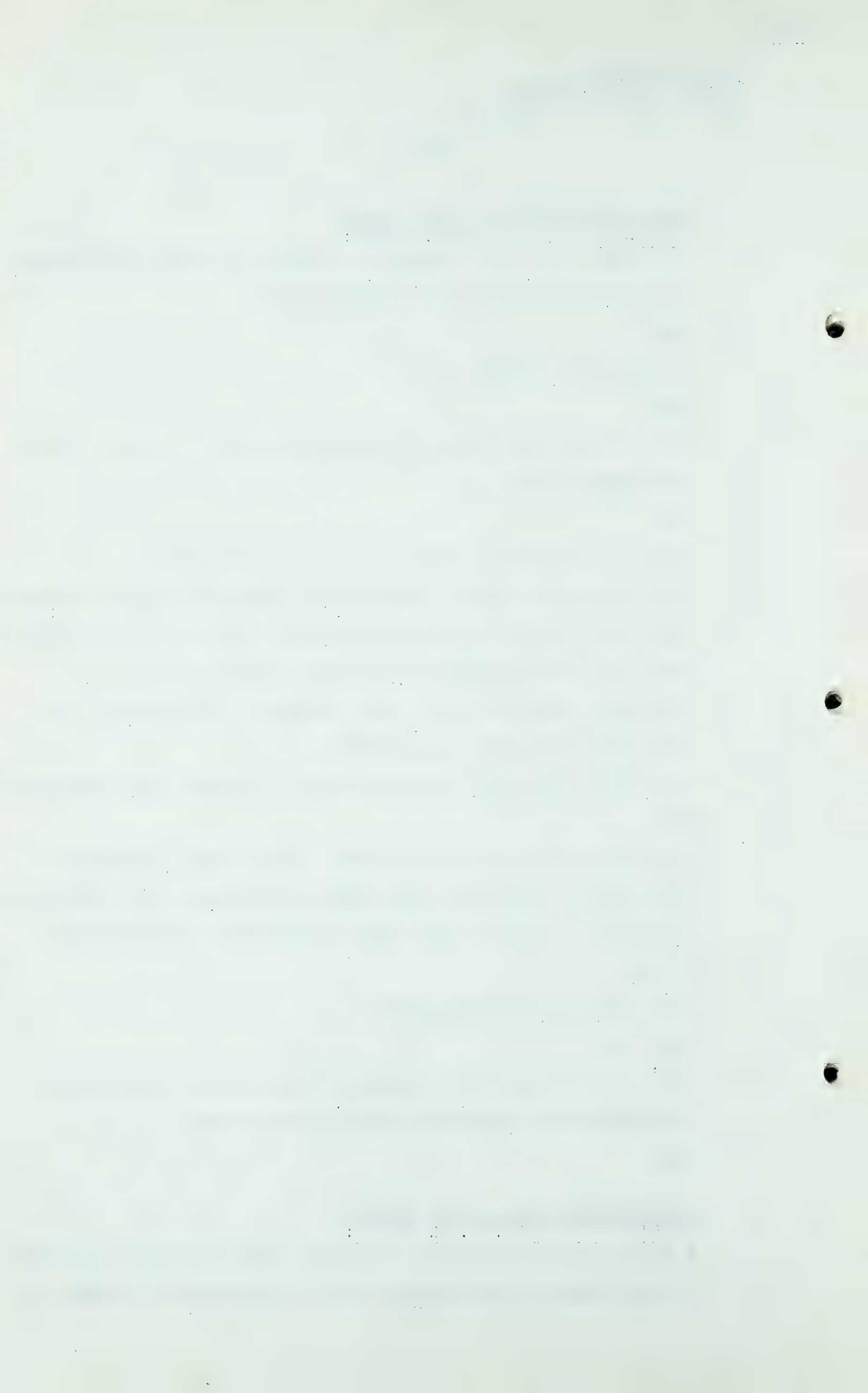
A Yes, sir.

Q And I should ask you, I suppose, the origin of the gas is the Hugoton and Panhandle areas in the South?

A Yes.

EXAMINATION BY MR. C. E. SMITH:

Q I have just one question, if nobody else is ready. I observe, having regard to your pages 2 to 5 as amended, and comparing



W. L. Shomaker,
Exam. by Mr. Smith.

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them with your 2 to 5 in your original submission which was distributed, that the corrections or amendments had to do with 1955, 1956, 1957 and 1958 and all items of cost of company use and unaccounted for?

A Yes.

Q Would you explain that?

A Because these original entries were inaccurate in the preparation of the said exhibit, our staff members had indicated some figures with regard to new communities, and after studying the latter more closely I had recognized the error in the figures and for that reason they are included and show our corrections and replace only the estimates in future years for those communities in present use, and not for any other communities filling in. The corrections which now show on pages 2 and 3 represent our best estimates with respect to our presently connected 229 communities, and for that reason there is that correction required.

Q And there would be no other reason. The changes were not made because of something that has occurred before this Board since you prepared your original one, which in fact would change the figures?

A Not to my knowledge. On studying the preliminary figures and recognizing the errors therein I corrected them.

Q I believe you told Mr. Nolan with a figure of 27.8 at the border, and at the present volume, you could add 10 cents to that and get a figure of roughly 38 cents for gas at the end of your line?

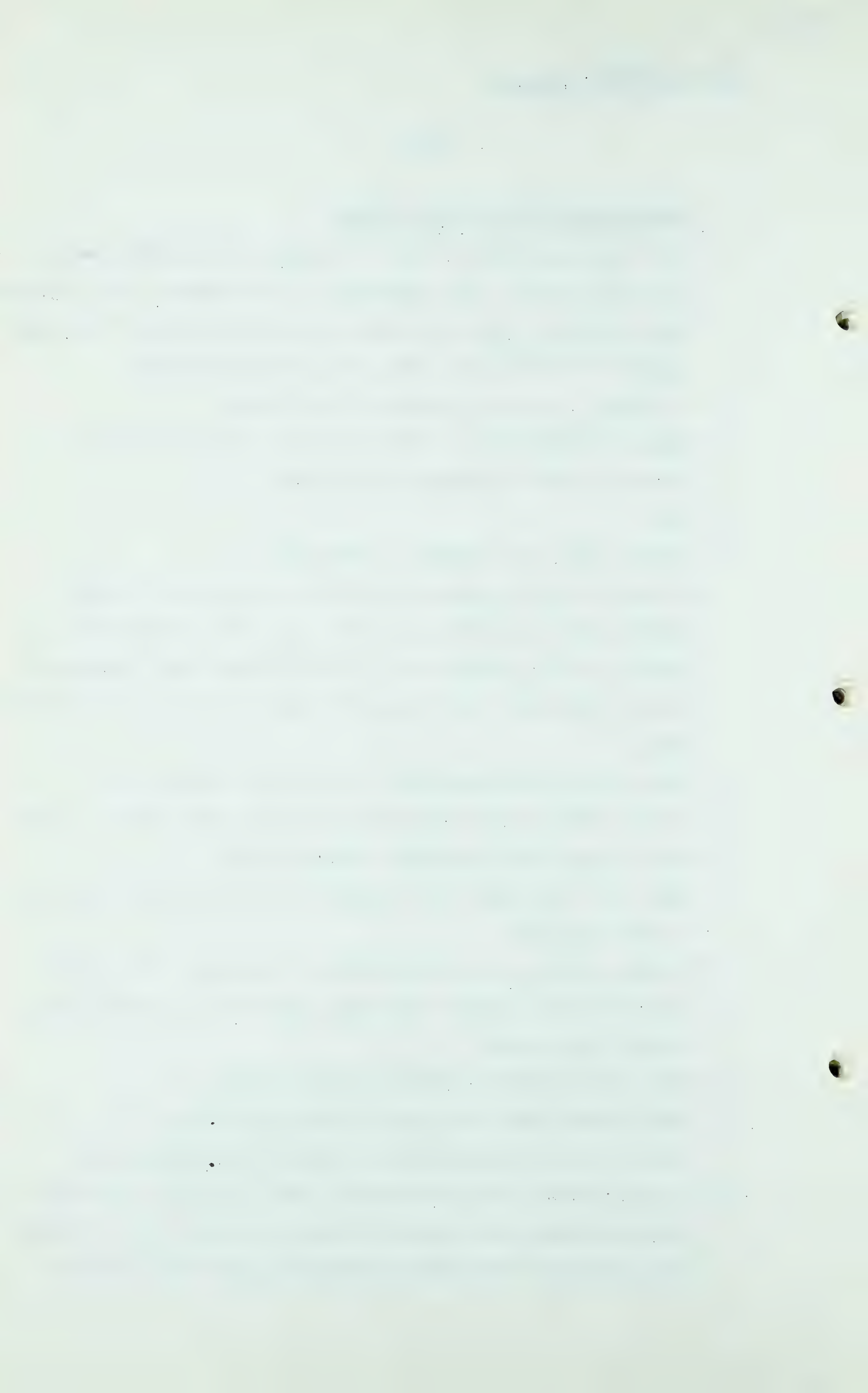
A Yes, sir.

W. L. Shomaker,
Cr. Ex. by Mr. Milvain.

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CROSS-EXAMINATION BY MR. MILVAIN:

- Q May I ask a question or two. I noted, Mr. Shomaker, when you were answering the questions of your counsel, Mr. Martland, which he put to you, you mentioned something about servicing a proper service area. What did you mean by that?
- A I thought I said our proposed market area.
- Q Proposed market area. Well, does that envisage some extension of what is shown on this map?
- A Yes.
- Q How far would you figure on extending it?
- A We have no exact perimeter that we have set out to show exactly what our market area will be. We recognize we are subject to the jurisdiction of the Federal Power Commission and any extension would naturally require to be placed before them.
- Q Have you in mind extending to any major communities?
- A At the moment we are primarily concerned with getting enough gas to supply the presently connected 229.
- Q When you speak about your "prospective area" where have you in mind going to?
- A We have not as yet crystallized our thinking to the extent of arriving at any one particular community. We have many we have considered.
- Q Were you considering Duluth, among others?
- A This depends upon the facts as they may develop.
- Q And what others in addition to Duluth have you in mind?
- A We are thinking about Watertown, Iowa and Newton, Iowa and areas, perhaps, that would be located on any line that might be required to make such an extension, and many southern



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Cr. Ex: by Mr. Milvain.

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Minnesota communities, and in Western Wisconsin there are several communities we have been studying. We have recognized, however, for many years, that our major problem is that of being able to secure enough gas to satisfy the requirements of present customers.

Q What about the northern Minnesota area when this line, if it does, gets hooked up from Canada?

A I think there will be another witness who will deal with this. The map which has already been referred to of the proposed route, bringing that line and the proposed area extended from the International Border to Minneapolis. But up to the present time we have not completed or crystallized to any final degree our thinking with regard to the method and manner in which any community in Northern Minnesota would be served. It has been studied and it is possible we might extend from Minneapolis but not any particular extension from the International Border. That would depend upon circumstances existing at that time.

Q And in making the market survey, did you take into consideration an area that might be served with this line taking gas up to the Canadian border?

A There has been no thorough study made of any of the communities that might lie in the proximity of any line.

MR. MILVAIN: As I understand it, Mr. Martland, you are going to call another witness dealing with market requirements in the United States?

MR. MARTLAND: No, there is no other witness regarding markets, just pipe line routes.

Q MR. MILVAIN: Then there are one or two other



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Cr. Ex. by Mr. Milvain.

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things I will have to ask this witness. I gather, Mr. Shomaker, from looking at this contract that has already been marked as an exhibit, that Northern has some 6 trillion dedicated to its use already in the United States, that is correct?

A Yes.

Q I notice, too, from the contract that Northern speaks of making application to the F.P.C. for an increase in capacity from 675 to 825 daily, that is, million cubic feet?

A Yes.

Q And that application has, in fact, been made and appears in F.P.C. docket G-1618?

A That is correct.

Q In connection with that application exhibits were filed showing the manner in which you could meet your requirements?

A Yes.

Q I am suggesting to you that an exhibit was filed in that proceeding indicating the manner of meeting your requirements up to the year 1965 from the fields to which you are already connected in the United States?

A Predicated upon the volume as indicated in the proposed application to 825.

Q Predicated on your volume being increased to 825 million cubic feet daily?

A Yes.

Q And having got that increased capacity approved by the Commission in the United States, you could then meet your market requirements from the fields in the United States until 1965 and there will be no deficiency until then?

A Provided no additional community was added and provided that

W. L. Shomaker,
Cr. Ex. by Mr. Milvain.

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no additional requirement would be met to presently connected communities - which, of course, there will be, as indicated on pages 2 and 3.

Q Your application to the Federal Power Commission would include whatever you contemplated would be the normal development on the existing system?

A No. It went on the assumption of 825 million capacity. Our exhibits were made at the specified request of the staff and in the manner we presented.

Q In the increase from 675 to 825, have you envisaged an extension beyond what you now serve?

A An extension in the communities, to the presently connected communities, yes, sir.

Q You would extend the service to the communities you are now connected with?

A Yes.

Q And you would then meet the requirements of that system until 1965?

A No. When we indicated approximately 825 million cubic feet per day, as entered in the exhibits, we presented in Docket G-1618 before the Federal Power Commission, was in answer to a request made to us what the requisition would be in 1952 on the assumption we would have an average of 825 million capacity in 1951, It presumed a capacity at 825 and likewise it presumed that there would not be any more connected communities in such an area. But we were not permitted, perhaps unfortunately, to indicate to the Federal Power Commission the request of the presently connected communities, based on our past estimates, as indicated here in exhibit 107 in this proceeding.

W. L. Shomaker,
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Q But your necessity of requesting the increase from 675 to 825 was in order that you could expand your service to meet requests then made to you?

A Of the presently connected gas system at the time of the application. Since that time we have had additional requests from presently connected communities.

Q Beyond those dealt with in your application?

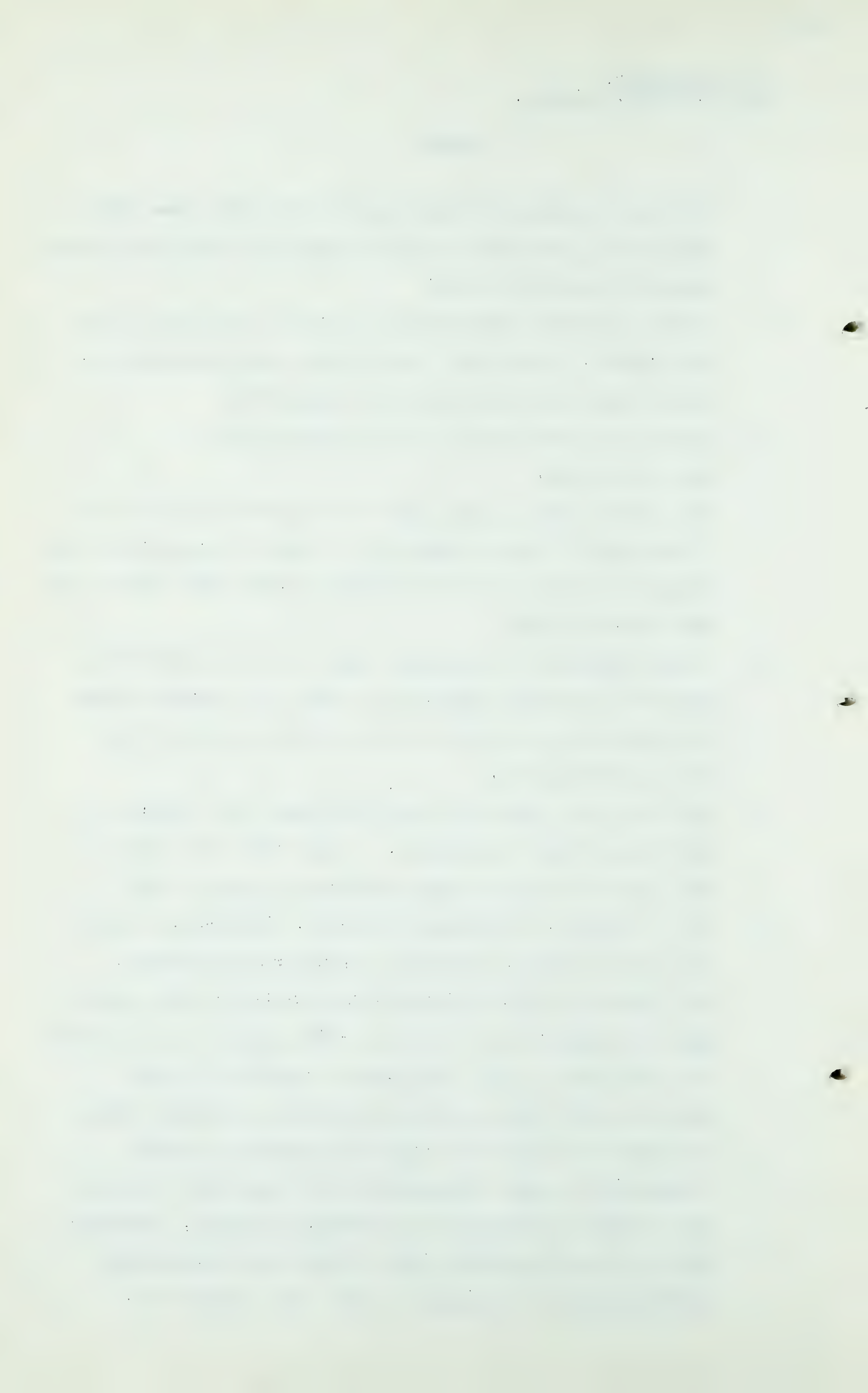
A That is correct.

Q The point I make, in the light of requests made to you up to the time of the application, you could then service your expanded system up to those requests until 1965 without gas from anywhere else?

A I must encompass the language that if the requests of the presently connected communities would be no greater than in 1952, which, of course, our estimates indicate they will undoubtedly be.

Q That is on the basis that when you made your request to the Federal Power Commission, on that basis you have no need beyond the gas already connected up until 1965?

A No. I repeat, it becomes necessary, obviously, to move the capacity and the reserves forward simultaneously. The reserves we have estimated that we had at the time we made our application in Docket G-1618 would in our opinion be sufficient to make increases in capacity from 600 million to 825 million to the presently connected communities and would have to supply the requests of such communities on such requests only for one year, the first year, which we estimated to be 1952, and which, incidentally, in the intervening time we have had considerable difficulty and it indicates we will not complete it.



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Q If your requests were frozen as of 1952 you would then meet them from fields which you were then connected to up until 1965, but if your requests expanded, were not frozen, as of 1952 you would not?

A Well, now, I will try to state it in my way. If the requests in 1952 did not increase or any additional load be added to the pipeline system from the period 1952 to 1960, then the amount of gas we had in reserve would have met the requests.

Q Now, I have in front of me, Mr. Shomaker, a copy of your application to the Federal Power Commission, Docket G-1618,

A Does that Docket bear date February 19th?

Q February 19th, 1951. And I am reading from page 10 of that application, and you say this:

"Applicant's pipelines system is in probably the most favoured geographical location of most of the major pipelines of the country in regard to its proximity to any potential sources of large volumes of new natural gas reserves. Applicant's line is within 500 miles of the Gulf Coast area, within 130 miles of the Elk City, Oklahoma, field within 250 miles of the Permian Basin, within 400 miles of the Western Nebraska Development."

Now, all of these fields mentioned in this application are fields to which your system is not now connected?

A Yes.

Q So that if you got gas from any of those fields it would be in addition to the reserves that you had in mind in telling the Federal Power Commission that you could meet your commitments up to 1965 on the basis you have out-

W. L. Shomaker,
Cr. Ex. by Mr. Milvain.

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lined previously?

A That would depend on our ability to negotiate for additional reserves, yes.

Q And the distance you have to go to get this Alberta gas is more like a thousand miles, isn't it?

A Well, Northern itself contemplates, I believe, in these proceedings to construct something not in excess of 400 miles.

Q But the whole system from the Pincher Creek field down to hook up with your present system in St. Paul is roughly a thousand miles?

A Yes.

Q So that you are coming up here, in effect, for Alberta gas when there are these other gas fields mentioned in the application so much nearer at hand?

A Yes, but I might comment they are not readily accessible at reasonable terms and conditions in those areas, of course.

Q Since February when this application I read from was made, there have been considerable discoveries in the Williston Basin?

A I do not know all the facts concerning that, I am not qualified to make any comments.

Q You know of discoveries in the Williston Basin?

A In general, yes.

Q And that would be in addition to the other fields we have just mentioned a minute ago?

A Yes.

Q And that field would be nearer to you than the Pincher Creek field?

A Yes.

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Q Can you meet your expanded market from the fields to which you are already connected?

A Well, that would depend upon our ability to secure additional reserves, which at present we do not now have any contracts that will guarantee us any additional reserves other than the reserves referred to in your statement a few minutes ago.

Q In the fields in which you are now connected, assuming that you might be able to negotiate contracts, is there gas available for it?

A There is some gas. There is a question as to whether or not it is available to Northern.

Q Is there a question of price that makes a difference?

A There are many factors involved.

Q Factors other than price?

A Yes.

Q What is the price factor that is involved?

A Well, I do not think that I have available enough information to make any statements in that direction.

Q Can you not give us any information as to the price at which you might get additional reserves in the fields to which you are now connected?

MR. C.E. SMITH: You are getting a long way away from the rounded out position in Alberta.

A THE WITNESS: There might be some gas available at between 10 and 12, 13 cents. I do not know any at the moment.

Q MR. MILVAIN: That is, any fields to which you are now connected?

A Some, yes.



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Q Now, there are some other things I would like to speak to you for a moment about, Mr. Shomaker, and I am looking at Exhibit 107 which you discussed here, at page 3, the amended page 3. I notice that in the calendar year 1950 your large volume sales are shown as 80,435.2 million cubic feet?

A Yes.

Q And estimated for 1956 they are 161,150 million cubic feet?

A Yes.

Q That is an expansion of 80,697 million cubic feet?

A I have not made the subtraction. That sounds approximately right.

Q And from a previous exhibit which was filed, I think it was 106, it showed that the total amount of United States sales of Canadian gas as of the fifth year would be 54,750 million cubic feet of gas?

A Yes.

Q So that one might then say that the whole of the Canadian gas going into the Northern system will be being absorbed and more in extending these interruptible sales?

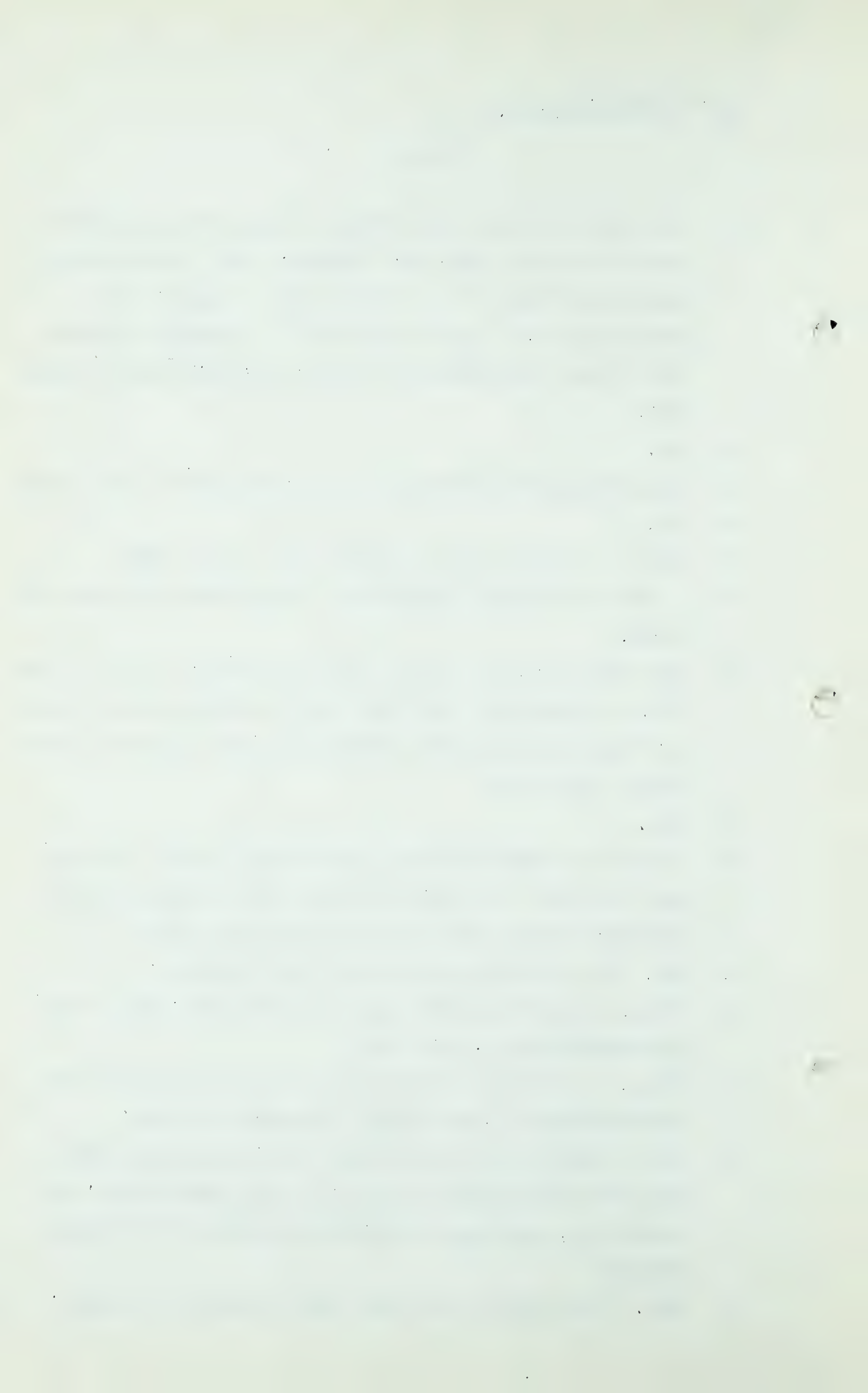
A No, I do not think you can make that statement.

Q Well, the equivalent has more than been used, that is obvious mathematics, isn't it?

A Well, if you take the difference between 160 and 80 being approximately 80, that figure is greater than 54.

Q What I mean to say is, the whole of the 54 million that goes over from Canada and more is being absorbed in, you might say, expanding interruptible services in the United States?

A No. I only agree to the fact that 80 was more than 54,



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but I will not agree that 54 will go into the making of the 161, which is the difference between 80 and 161. I am saying that the volumes of gas we are purchasing from Western in terms of 54 billion will not be used to make the figure to which volume difference is between that of 80 and 160.

Q Do you think you could increase your interruptible sales to that extent without gas from Canada?

A Yes.

Q From reserves in the United States?

A Pardon me again, do you think we could make the amount --

Q Increase your interruptible sales to the extent shown on page 3 of Exhibit 107 without any Canadian gas?

A If we get gas from some place else, we could, yes.

Q That is, from fields in the United States?

A Well, wherever they might be.

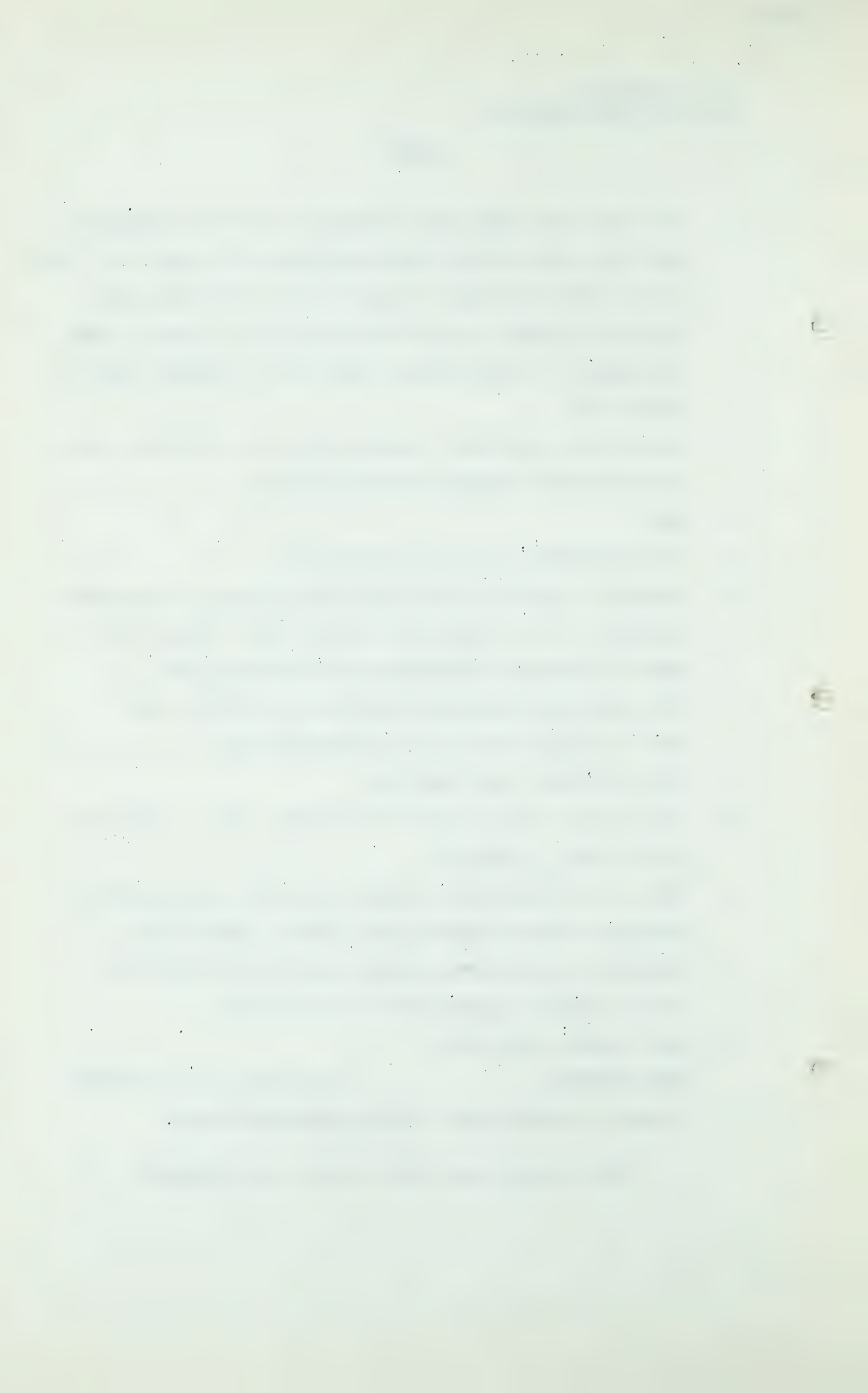
Q By the way, most of your interruptible load is used in boiler fuel, I suppose?

A There is a substantial amount. We have a considerable number of cement plants, glass plants, paper mills, creamery, agricultural products and the like which of course consume a great deal of it as well.

Q That is all, thank you.

THE CHAIRMAN: That will be all, thanks.
I think we might have a short adjournment now.

(The Hearing then took a short adjournment.)



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MR. PORTER: Mr. Chairman, in the record at page 2499 the Board requested Mr. Shattuck to calculate and supply some figures, which he has done, and I have just handed the reporter the statement. Now, Mr. Shattuck is here, and I doubt if it is necessary to call him, but perhaps the Board might take a look at this and decide whether they do want to hear him, and then he can come on a little later. I have only this to say, he has been waiting here now for a matter of considerable time, and while I do not like to interrupt another counsel's case, in all fairness I think his time of waiting has been pretty long, so that if the Board will take a look at this document and decide whether they would like to have him in the witness stand, I can then arrange to produce him. I have supplied counsel with copies of this.

THE CHAIRMAN: I think Mr. Shattuck should be on the stand to support this statement, Mr. Porter. We agreed to let Western Pipe Lines, if possible, finish their case. Now, I will leave it up to Mr. Martland.

MR. PORTER: Well, the morning would be all right. I would like to get Mr. Shattuck away in view of the length of time he has waited already.

THE CHAIRMAN: We will try to arrange for tomorrow morning.

MR. MARTLAND: I think there is a reasonable chance to get through by then.

THE CHAIRMAN: All right.

MR. MARTLAND: I will call Mr. Wrench.

.....

Harry K. Wrench,
Dir. Ex. by Mr. Martland

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HARRY K WRENCH, having been first
duly sworn, examined by Mr. Martland, testified as follows:-

Q Mr. Wrench, you are the President of the Minneapolis Gas
Company?

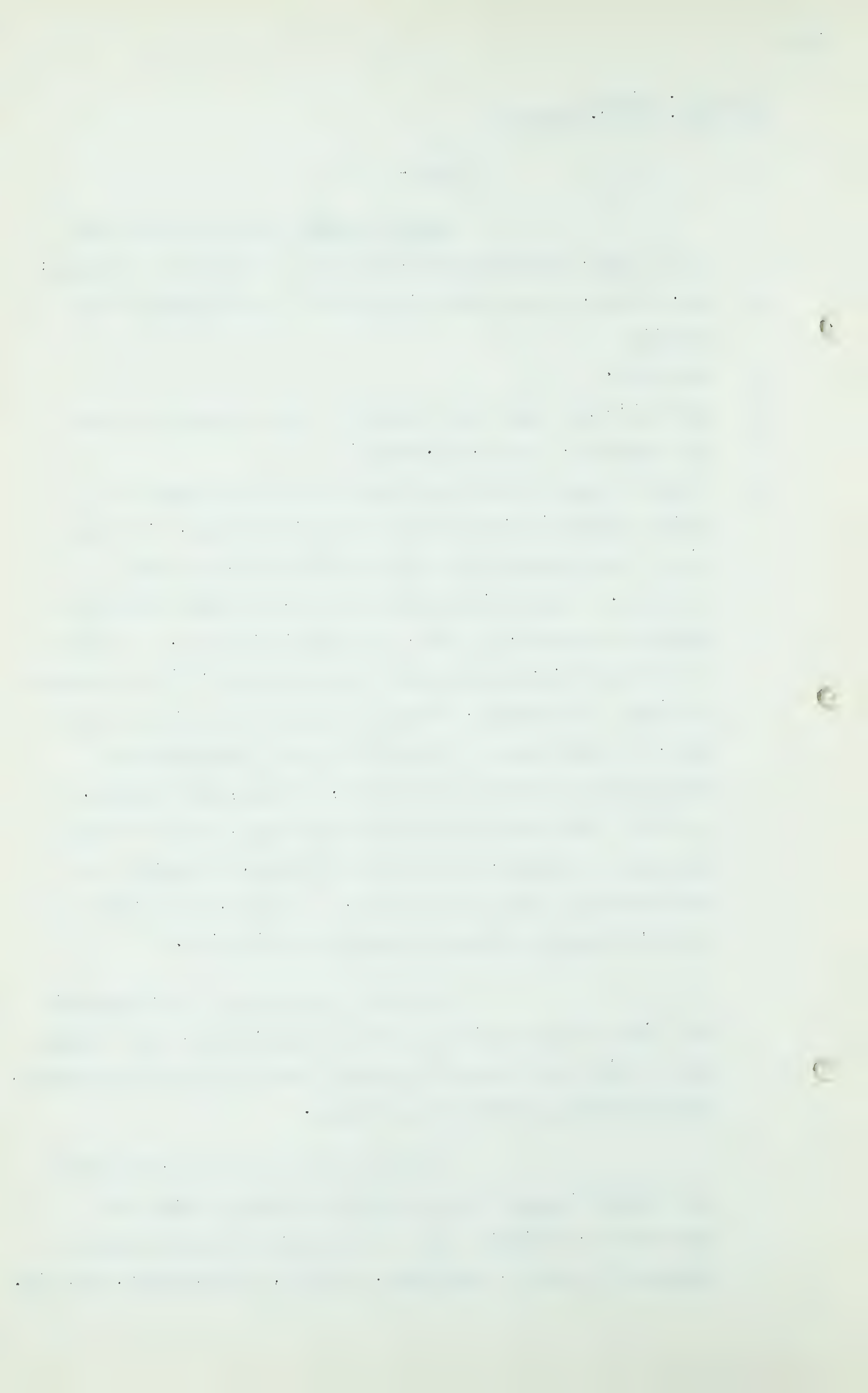
A Yes, sir.

Q And would you just give us some of your background in the
gas business, please, Mr. Wrench?

A I left college in my junior year in 1917 to attend the
First Officers' Training Camp at Fort Sheridan, at which
time I was commissioned a Second Lieutenant and went
overseas. On returning from the war, I joined the Battle
Creek Gas Company, in 1921, as a cadet engineer. In 1922
I was made Vice-President and General Manager of the Marshall-
Michigan Gas Company, with which company I remained until
1924, at which time I became Secretary, Treasurer and
General Manager of the Palm Beach, Florida, Gas Company.
In 1925 I left there to return to Michigan, where I became
Manager at Plymouth, Northville and Wayne, Michigan, for
the Michigan Federated Utilities. In 1927, I was made
General Manager of Michigan Federated Utilities.

In 1930 I was elected Vice-President
and General Manager of the Lowell Massachusetts Gas Company,
where I also had charge of several other gas plants in Vermont,
Massachusetts and the State of Maine.

In 1935 I was elected Vice-President
and General Manager of the Jacksonville Gas Company of
Jacksonville, Florida, where I had charge of operations at
Jacksonville and St. Augustine, Florida, and Savannah, Georgia.



Harry A. Wrench,
Dir. Ex. by Mr. Martland

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In August of 1937 I was elected Vice-President and General Manager of the then Minneapolis Gas and Light Company, and was elected President of the Company in September of 1941.

Q And you have been President since that time?

A Yes, sir.

Q Are you a member of the American Gas Association Advisory Council?

A I am, yes, sir.

Q I believe you are a member of the Gas Advisory Council established by the Secretary of the Interior?

A Yes, sir.

Q Now, Mr. Wrench, will you just tell us briefly the population of the area which the Minneapolis Gas Company serves with natural gas?

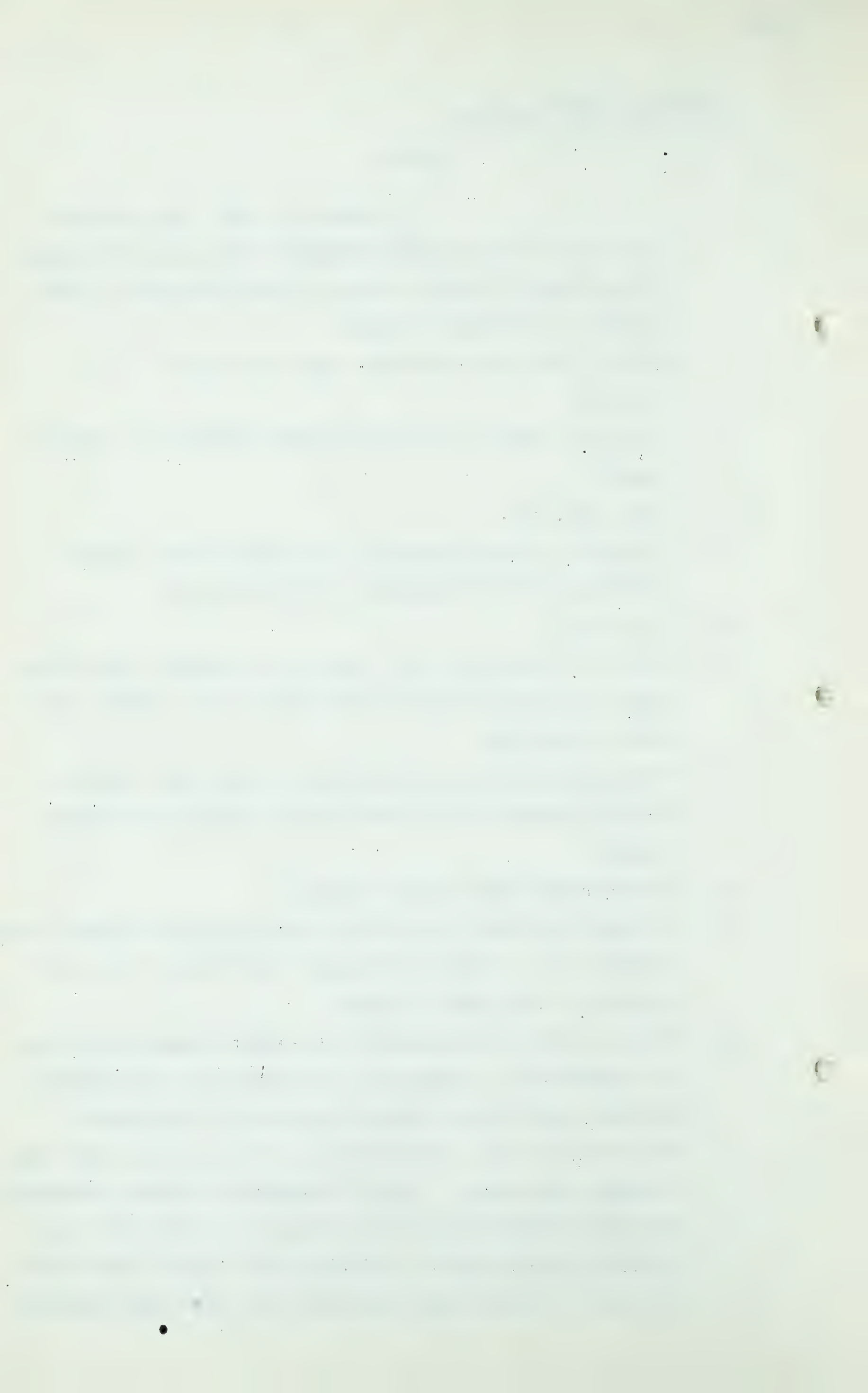
A The population of the area served is just over 650,000.

Q And your supplies of natural gas are obtained from what source?

A From Northern Natural Gas Company.

Q And would you mind indicating to us the extent to which your market, that is your own Company, has increased say, over a period of the last 15 years?

A Prior to 1935 the Minneapolis Gas-Light Company, which was the predecessor company to the Minneapolis Gas Company, had for over 75 years served the people of Minneapolis and vicinity with, first water gas, then coal gas, and then straight water gas. In 1935, natural gas became available from the Northern Natural Gas Company. At that time the Company was selling the equivalent of 3 billion cubic feet per year of natural gas equivalent for which they received



Harry K. Wrench,
Dir.Ex. by Mr. Martland.

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approximately 15 cents per therm. At the present time, the year ending October 31st of this year, our sales amounted to 37,432,000,000 cubic feet. We now supply 14 suburban communities of Minneapolis.

At the time we switched from water gas to the use of natural gas, for a period of from 1935 to 1947 we mixed our natural gas with gas that we manufactured, and supplied the town with an 800 BTU mixed gas. In 1947 we switched to straight natural gas of a thousand BTU. At the time we changed over to mixed gas in '35, we had slightly over 1000 house-heating customers. At the present time we have 91,000 house-heating customers, and, at the same time, we have 22,000 applicants still waiting to be served with house-heating.

We have not taken on any large industrial heating customers on a firm basis. The 91,000 customers we now have are all residential heating customers, with very few exceptions.

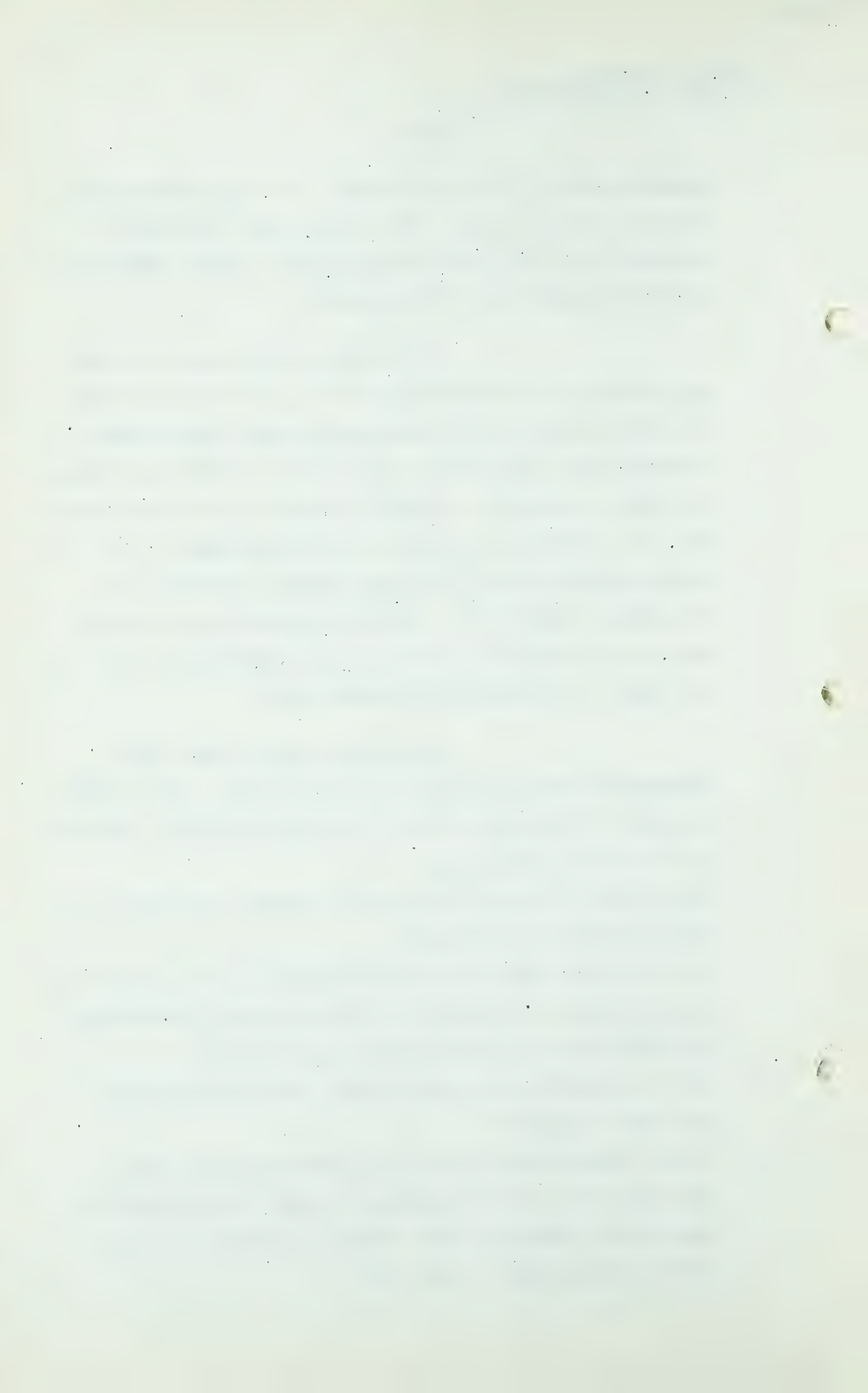
Q And you say you have a substantial waiting list within the group that you are serving?

A We have 22,000 domestic customers waiting to be served with house heating. We also have a large number of commercial customers who would like to have gas for heat.

Q Have you taken on any large volume commercial customers in the last few years?

A We have taken them on only on an interruptible basis.

Q Could you give us an estimate as to what is the possible market for commercial space heating, assuming you could get the natural gas to meet it?



Harry K. Wrench,
Dir. Ex. by Mr. Martland.
Cr. Ex. by Mr. Nolan

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A At the present time we buy gas under the two-part demand and commodity type rate, bearing a $4\frac{1}{2}$ cent demand charge and a 17-cent commodity charge. We are paying at the present time for 153 million cubic feet per day demand. We need very badly, over the next five years, an additional 150 million cubic feet per day. We estimate that we could put on a load amounting to 10,000,000 cubic feet per day, and when I say "per day", I mean on peak days, to take care of this commercial load of which I speak. And we could continue to add that load at the rate of 10,000,000 cubic feet per day for five years. In addition to that we need another 100,000,000 cubic feet to take care of house-heating customers, domestic house-heating customers who are now waiting and who, we expect, will request gas for heat some time in the near future.

Q So that you would like very much to obtain an additional 150,000,000 a day, Mr. Wrench?

A Yes, sir.

Q Just answer any questions put to you, Mr. Wrench.

A Yes, sir.

.....

CROSS-EXAMINATION BY MR. NOLAN:

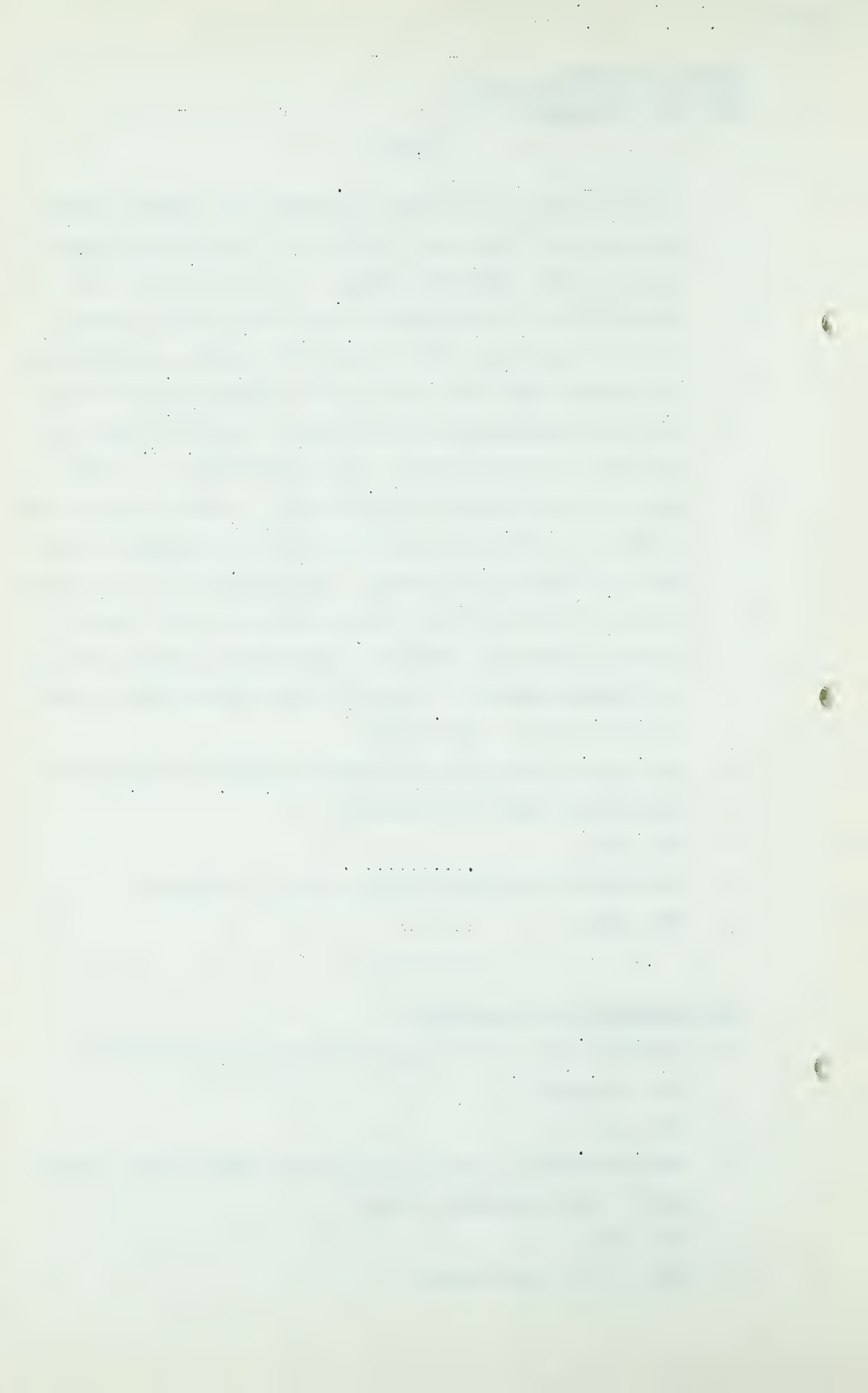
Q Mr. Wrench, do you buy gas from the Northern Natural at the city gate?

A Yes, sir.

Q And, Mr. Wrench, did you say that you paid $4\frac{1}{2}$ cents demand and 17 cents commodity charge?

A Yes, sir.

Q What is the load factor?



Harry K. Wrench,
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Cr. Ex. by Mr. S. B. Smith

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A Our load factor is about a little better than 50%. Our average price of gas at the city gate is 23 cents at the present time.

Q I see. 23 cents at the city gate at the present time?

A Yes, sir.

Q Thanks, Mr. Wrench.

MR. MARTLAND: I have one other question, sir.

THE CHAIRMAN: Yes.

.....

RE-EXAMINATION BY MR. MARTLAND:

Q You heard the evidence of Mr. Shomaker as to the approximate delivery price at the city gate at Minneapolis, Mr. Wrench?

A Yes, sir.

Q Would you be willing to buy it at that price?

A Well, it is my understanding that the Federal Power Commission sets all of the rates in the States, and, up until now, they have always required a rolled-in rate. With the rolled-in rate the additional cost would only increase our cost 2 cents per thousand, and we certainly would be willing to buy it at that.

Q That was the evidence I was referring to.

A Yes.

Q Thank you.

.....

CROSS-EXAMINATION BY MR. S. B. SMITH:

Q Mr. Wrench, you are very anxious to get more gas in order to expand your business?

A Yes, sir.

Q Your area has been served with natural gas, as you have

Harry K. Wrench,
Cr. Ex. by Mr. S. B. Smith

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indicated, for quite a few years?

A Yes.

Q Would you feel that your area should get more natural gas before some other area of the United States, which does not now receive natural gas?

A I am selfish enough to say "Yes".

Q It is a pure matter of business with you, you would like to get more natural gas to sell if you could?

A Yes, sir.

Q Would you go so far as to say that you should get Canadian gas before some part of Canada gets it that is not now served with gas? You would not go that far, would you?

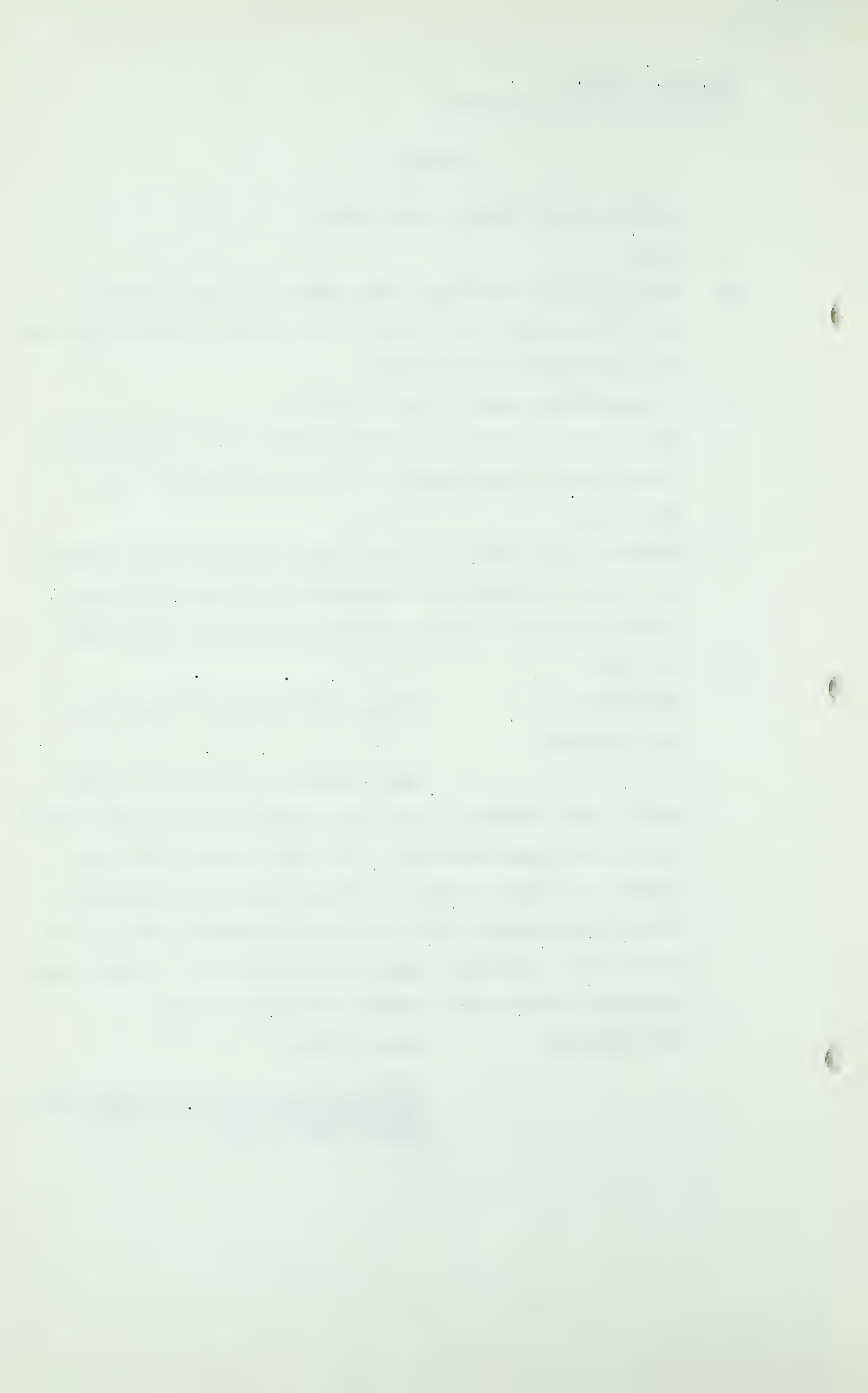
A No, sir.

MR. MARTLAND: Thanks, Mr. Wrench. I will call Mr. McConnell.

This witness, sir, will be introducing four exhibits, and it is proposed to introduce them in the following sequence: The one entitled "Proposed Route" to be put in first, followed by the one entitled "Pipe Line Design", the third one "Estimated Cost of Construction", and last, "Operating Estimates". I would like to tender now the one entitled "Proposed Route".

THE CHAIRMAN: Exhibit 108.

SUBMISSION ENTITLED "PROPOSED ROUTE"
SUBMITTED BY WESTERN PIPE LINES
MARKED EXHIBIT 108.



Earl J. McConnell,
Dir. Ex. by Mr. Martland.

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EARL J. McCONNELL, having been
duly sworn, examined by Mr. Martland, testified as follows:

MR. MARTLAND: Perhaps, sir, as a matter of convenience, we might mark the other three exhibits at this time?

THE CHAIRMAN: Pipe Line Design will be marked 109. Estimated costs of Construction, 110, and Operating Estimates, 111.

EXHIBITS NOW MARKED
EXHIBITS 109, 110 and 111.

Q Mr. McConnell, you are associated with Stone and Webster Service Corporation?

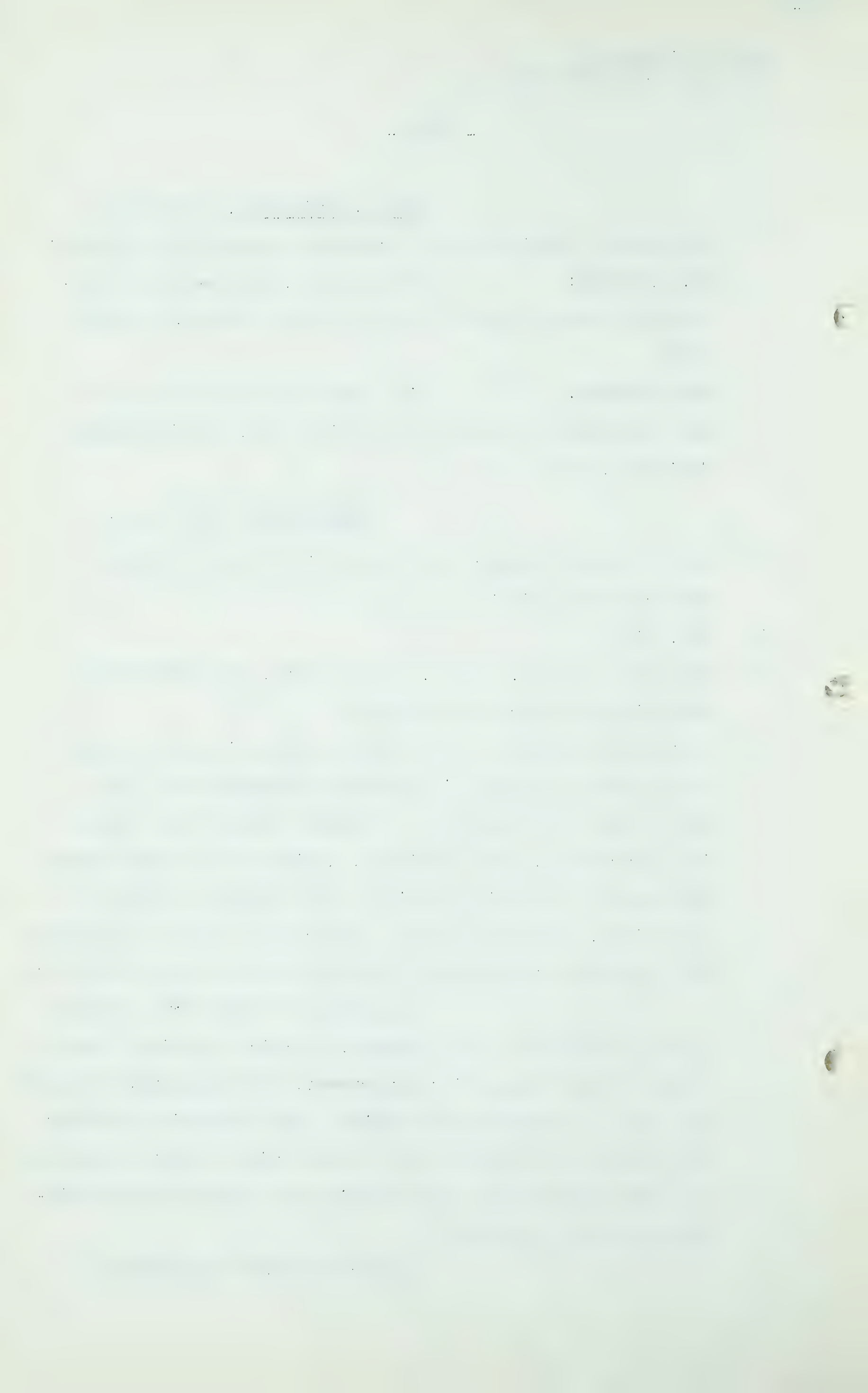
A Yes, sir.

Q Would you outline, please, to the Board, your educational qualifications and your standing?

A I attended Oklahoma A & M College, graduating with a degree of Bachelor of Science in Mechanical Engineering. Upon graduation I was employed by Oklahoma Natural Gas Company in January 1936, as an engineer, assigned to the Engineering Department. In this position I was engaged in design of pipe lines, gathering systems, compressor stations and served as Field Project Engineer on construction of such facilities.

In December of 1938 I was promoted to Chief Engineer of the company, in which position I was in charge of the Engineering Department, this department charged with the responsibility of design, cost estimation, letting of bids, and the construction of all major property additions and such engineering as was required for operation and maintenance of the property.

In March of 1947 I resigned my



Earl J. McConnell,
Dir. Ex. by Mr. Martland.

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position with Oklahoma Natural Gas Company and accepted a position as engineer with Stone & Webster Service Corporation in New York City. In this position I have been engaged in advising and assisting clients in various problems involved in development, expansion and operation of gas utilities. Among the companies with whom I have been associated and for whom I have done work, are Texas Gas Transmission Company, Columbia Gas System, Equitable Gas system, Transcontinental Gas Pipe Line, Piedmont Natural Gas Company, and Western Gas Transmission Company. My present position is Co-ordinator of Gas Engineering. I have given testimony before the Federal Power Commission. I am a registered Professional Engineer.

Q On behalf of this applicant, you have prepared or supervised the preparation of these four exhibits that are now numbered 108 to 111, inclusive?

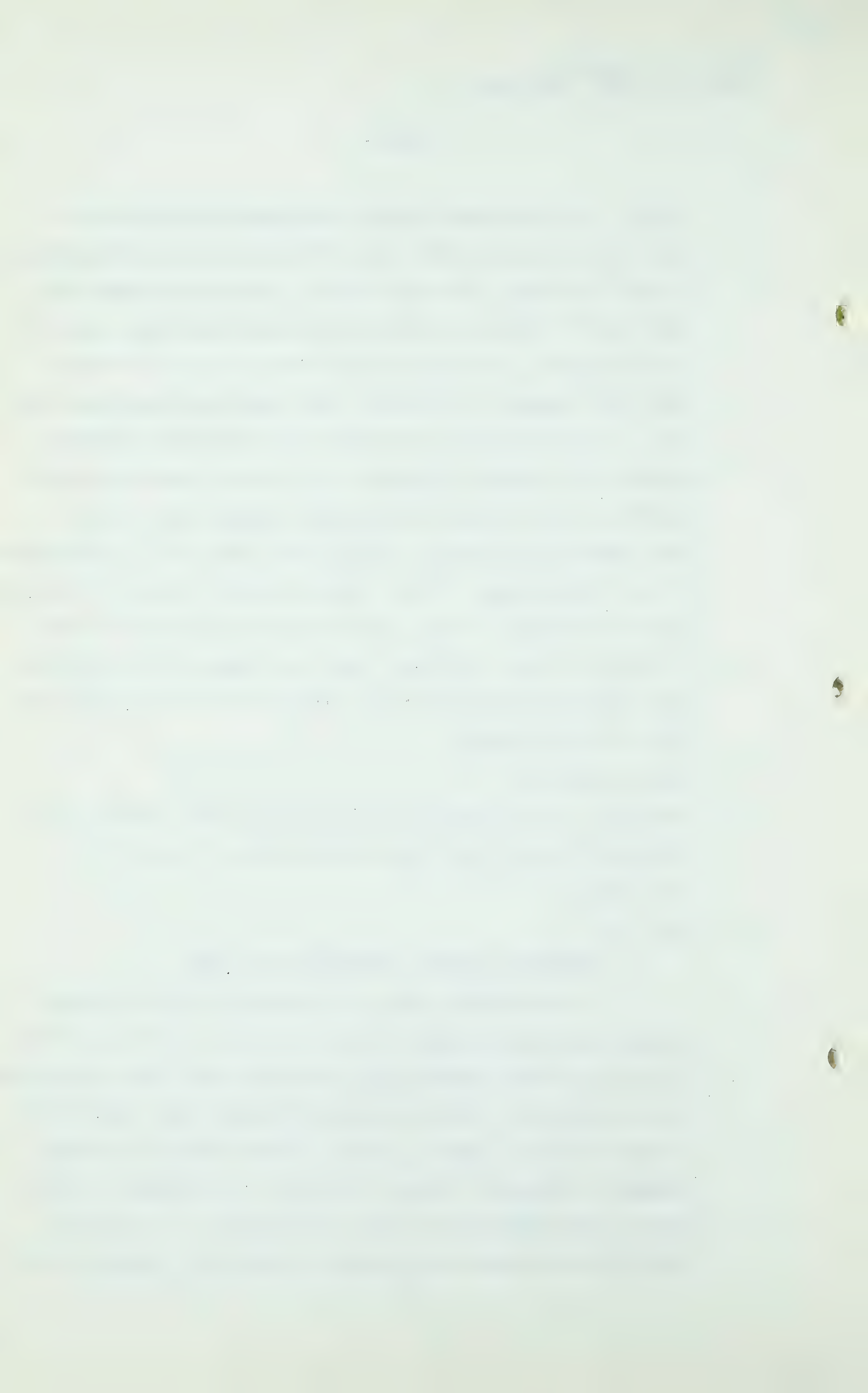
A That is correct.

Q I wonder if, Mr. McConnell, you will deal with exhibit 108, "Proposed Route", and if you would read to the Board the text, please.

A Yes, sir.

PROPOSED ROUTE OF WESTERN PIPE LINES.

The proposed route of Western Pipe Lines extends eastward and northeastward from a point in the Pincher Creek field through the Pakowki Lake and Many Island Lake production areas in Alberta, thence generally eastward past communities of Swift Current, Chaplin, Moose Jaw and Regina in Saskatchewan and Brandon, Portage la Prairie and Winnipeg in Manitoba. From Winnipeg the route runs south to a proposed point of connection with Northern Natural Gas Company on the



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Manitoba-Minnesota border near Emerson, Manitoba. A map of the proposed pipe-line system is attached as appendix I.

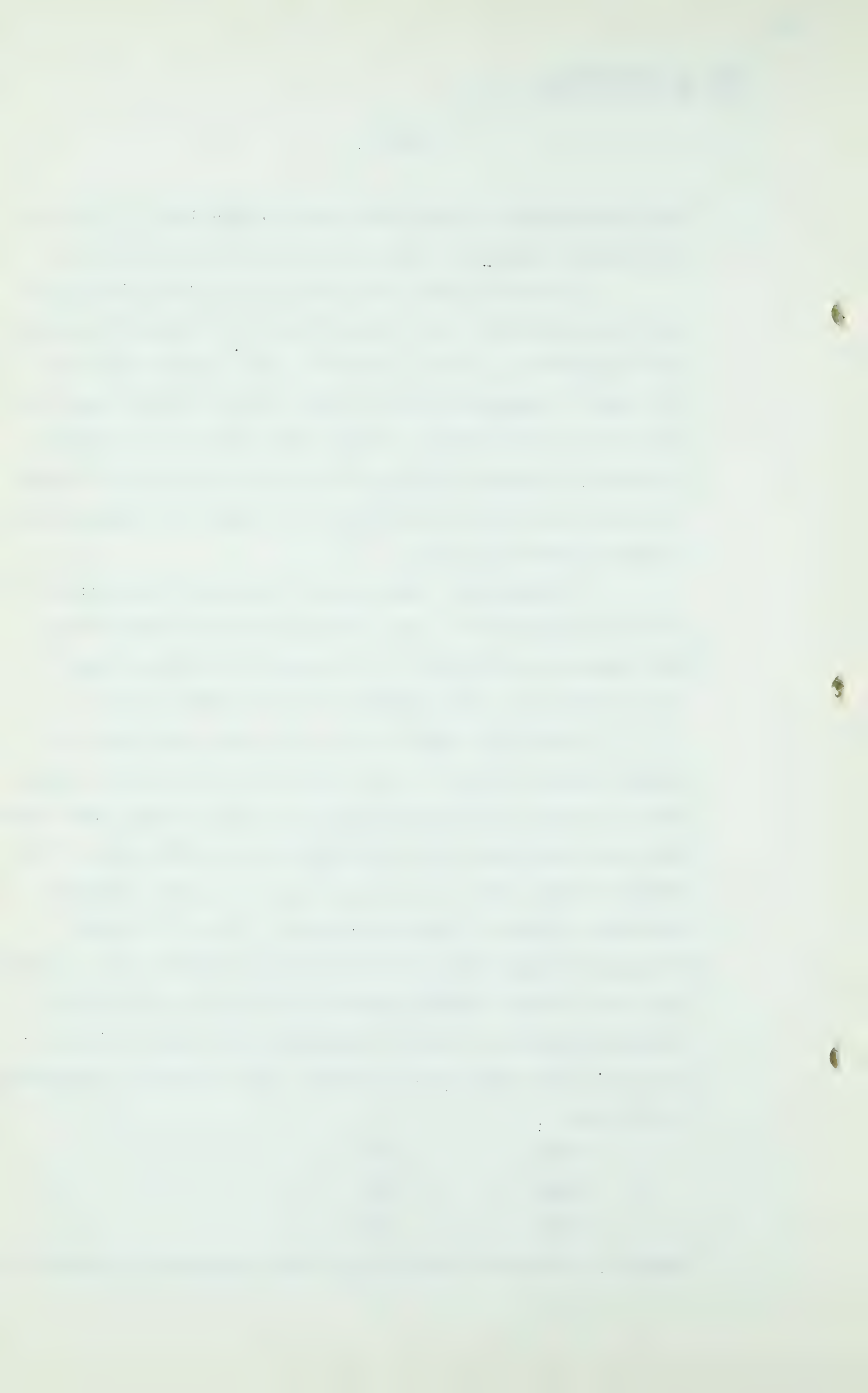
A reconnaissance and preliminary investigation of the route was made by Mr. Julian Garrett, a consulting engineer of Edmonton, Alberta, in 1950. Mr. Garrett covered the route by automobile using large scale sectional maps for orientation and compiled copious notes covering the types of terrain, stream crossings, highway and railroad crossings and other information pertinent to alignment and construction of the proposed pipe line.

A subsequent inspection of the route was made by air by an employee of Stone & Webster Service Corporation. This inspection verified the findings of Mr. Garrett and was the basis for the estimate of construction costs.

The total length of the pipe line, exclusive of lateral lines is based on the scaled distance plus an allowance of 1.5 per cent to compensate for under bends, over bends and minor diversions and is estimated to be 833 miles. The longest lateral line, the one proposed to supply Saskatoon and Prince Albert is approximately 202 miles in length. The main line and all branch line routes are feasible throughout, but portions thereof naturally differ in the type of terrain traversed. From the standpoint of pipe line construction, the main line and branch line routes are summarized as follows:

Good	64%
Fair	33%
Poor	3%

Details of terrain classification are presented in Appendix II.



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In the foregoing, good is considered to be gently rolling arable or grazing land requiring less than 25% clearing, with no solid rock and reasonably free of loose rock to ditch depth. Fair is considered to be rolling, hilly country, land requiring more than 25% clearing, or where machine ditching would be slowed down because of unfavorable soil conditions or an unreasonable amount of loose rock. Poor is considered to be rough country, marsh lands, muskeg or where solid rock would be encountered or any type of country where machine ditching would not be reasonably continuous.

Crossings of streams of 50 feet or more in width are shown in Appendix III.

Additional engineering and economic studies are now in the process of being made regarding alternative points of delivery to Northern Natural Gas Co.

I think the appendices are self-explanatory.

Q Any particular comment you want to make on them at this stage?

A No, sir.

Q Very well, Mr. McConnell, if you would now proceed with exhibit 109, "Pipe Lign Design."

A PROPOSED DESIGN
OF
WESTERN PIPE LINES
MAIN LINE

Pipe

It is proposed that the main line of Western Pipe Lines be of 24 inch outside diameter for its entire length, and that the pipe be of 1/4 inch wall thickness and 52,000 pounds per square inch minimum yield strength after fabrication. Such pipe has an allowable working pressure of

Earl J. Mc^Connell,
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780 psig, which working pressure is incorporated in the design of the line.

Compressors

Angle type, gas engine compressors are proposed to be installed in the compressor stations on the line. Units of 1,100 rated brake horsepower have been chosen, four of which would make up one complete station.

Included herewith are schedules presenting the estimated flowing conditions and compressor horsepower requirements for the peak winter days of demand which can be expected to occur at the ends of the first and fifth operating years. The horsepower required for compression for winter operating conditions is computed on the following conditions.

1. Suction temperature of 30° F.
2. Gas volume corrected for deviation from Boyle's Law at suction conditions
3. Allowances for pressure drop through plant piping of 5 psi and 10 psi through suction and discharge piping systems, respectively

The horsepower required for compression at operating conditions have been verified with a reputable compressor manufacturer.

It should be noted that the horsepower proposed to be installed exceeds the theoretical requirement by from 21 to 56%. This excess horsepower is desirable and will serve the following purposes:

1. Permit units to be shut down for maintenance
2. Compensate for higher gas flowing and suction temperatures

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3. Compensate for lower flowing efficiency than anticipated
4. Permit greater flexibility in the purchase of gas in various fields.

Flow Computations

The Panhandle Formula has been used to compute flowing conditions. This formula is . . . and I do not think I need read it. It is a bit complicated.

Q Have you any comment you wish to make with regard to the appendices, Mr. McConnell?

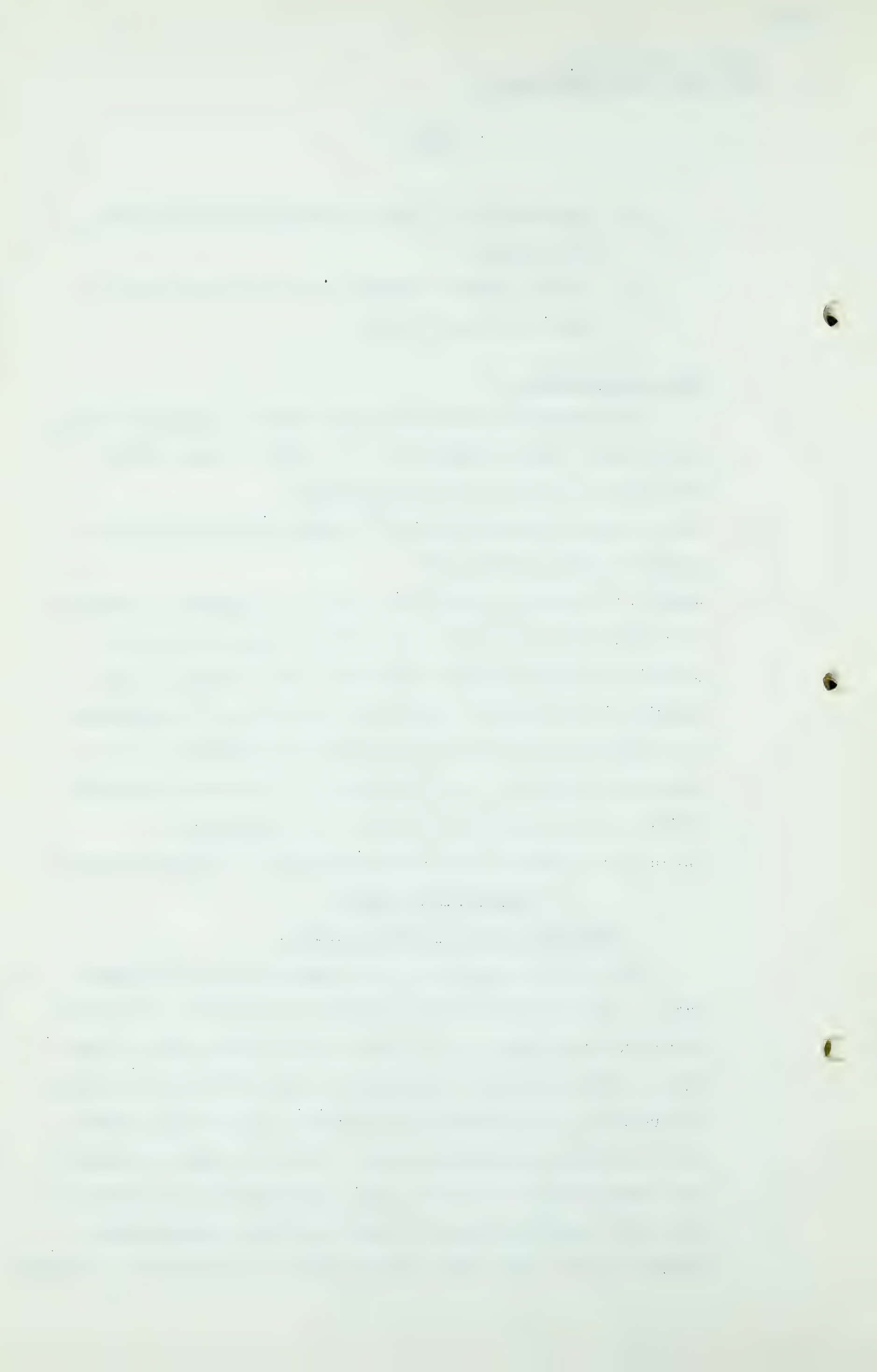
A Appendix I shows the main line as it is expected to operate on a peak day at the end of the first year, showing the location of the compressor stations, the volumes of gas flowing in the various sections of the line, the pressures at various points and the horsepower requirements in the compressor stations. In Appendix II it presents the same thing for a peak day at the end of the fifth year.

Q Go on now to exhibit 110, "Estimated Cost of Construction".

A WESTERN PIPE LINES

ESTIMATED COST OF CONSTRUCTION

Included as Appendix I is a summary of the estimated cost of construction of the project as designed to meet the peak day requirements at the end of the fifth year of operation. This estimated expenditure of \$71,500,000 is expected to be spread out over both the initial construction period and the several operating years. The horsepower required for compression to meet the peak requirements at the end of the first operating year is only 16,500 as compared with 29,700 for the fifth year requirement. As a result, estimated



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construction requirements for the initial program are \$66,169,000.

Appendices II, III, IV and V present details of the estimated cost of constructing the main line from Pincher Creek to the International Boundary at Emerson, a typical compressor station, the various sales laterals and measuring and regulating stations.

Survey

The construction cost estimate provides for an aerial survey at \$25 per mile and the ground survey and location at \$250 per mile. Included is the preparation of such maps as are necessary and surveying as required during construction.

Rights-of-Way and Damages

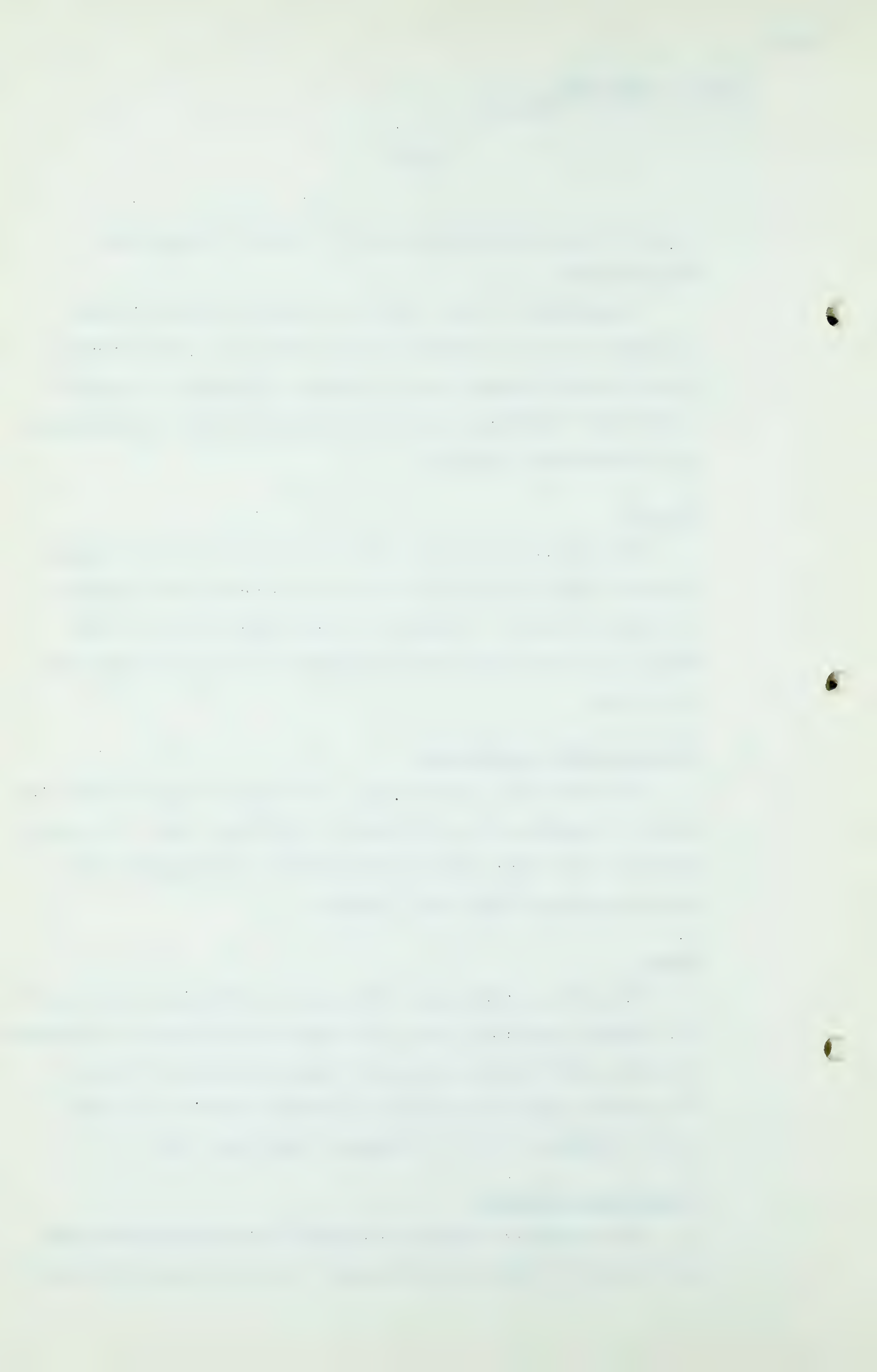
The costs of rights-of-way and damages together with the cost of acquiring are estimated at \$2.50 per rod. This estimate is based upon rights-of-way costs experienced by the Inter-Provincial Pipe Line Company.

Pipe

The cost of the main line pipe is estimated on the basis of current quotations from A.O. Smith Corporation of Milwaukee together with freight, duty and taxes applicable thereto. The average price of pipe so estimated results in a unit cost of \$198 per ton at railheads along the line.

Compressor Stations

The proposed compressor stations are estimated to cost an average of \$345 per horsepower including land, all equip-



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ment, buildings, water supply and employee housing.

Pipe Line Installation

The cost of installing the 24" main line is estimated at \$2.95 per foot including clearing and grading of the right-of-way, ditching, welding, coating, laying and back filling. The estimated cost of installing the various lateral lines range from \$1.40 per foot for 10" pipe to \$0.70 per foot for 4" pipe. These estimates were arrived at after inspection of the route and discussion of costs with contractors and operators in the area.

Other

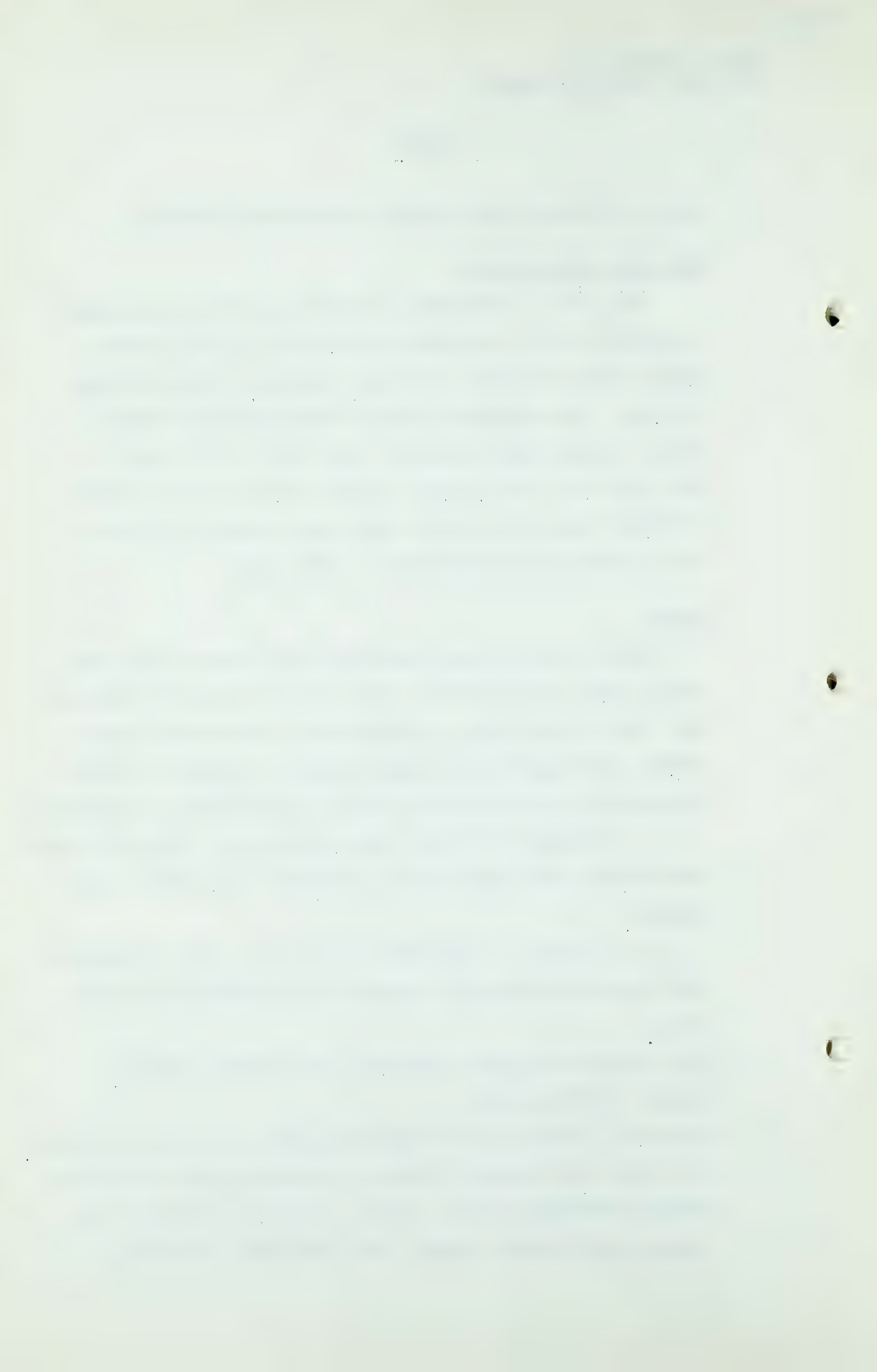
Supervision and engineering is included at 3% of cost for the pipe line and 5% of cost on the compressor stations. This item is inclusive of preliminary and detailed engineering, all supervision, engineering and inspection during construction and any certification work that may be necessary.

An allowance of 6% has been included for interest during construction and other general overheads applicable to the project.

An allowance of approximately 5.2% of total construction cost has been included to cover such contingencies as may occur.

Q Will you deal with the appendices now to that exhibit, please, Mr. McConnell?

A Appendix I summarizes the total estimated cost of the project, the first line showing the main line, and going on with compressor stations, lateral lines, regulating and measuring stations and general plant. As I mentioned, this is a



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detailed estimate of the expenditure at the end of the fifth year. The initial construction period is something less.

Q What is included in the item of overhead?

A That is interest during construction and any other overhead charge of the project during the time of construction.

Q In computing it what period did you have in mind as to the construction period?

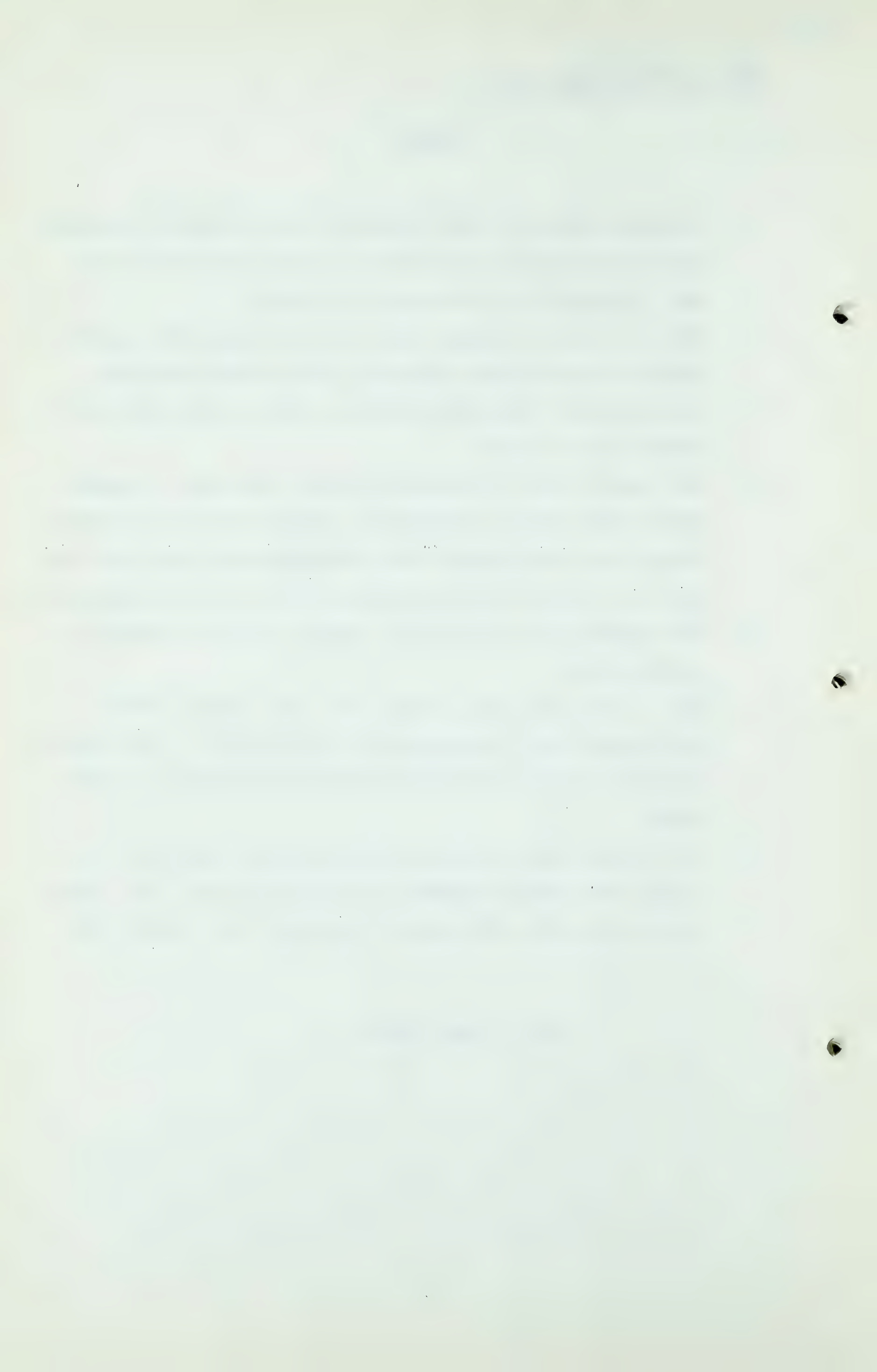
A The construction period would be near two years. Assuming that in one Spring or Summer the company could buy in right-of-way, and start buying and stockpiling materials, and the following Spring actually getting started on the construction.

Q And Appendix II, have you any remarks you want to make regarding that?

A This is the total cost of the main line, broken down by preliminary costs, materials and installation. This does not include compressor stations and measuring stations and so forth.

Q By the way, how does your estimated cost of pipe per ton compare with those submitted in connection with other applications here, Mr. McConnell. There have been variations?

(Go to page 3056.)



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A We have a mill price of \$137.50 per ton to which we have added \$26.20 to arrive at a total of \$163.70 exclusive of freight. That compares to \$125.00 for Trans-Canada, \$140.00 for Prairie, and \$155.00 for Westcoast.

Q Would those figures that we have just mentioned with reference to those other applicants compare with your \$137.50?

A Yes.

Q That would be the proper figure to compare it to. Anything else you want to deal with in the Appendix there, Mr. McConnell, Appendix II? It is pretty well self-explanatory?

A I think it is, sir.

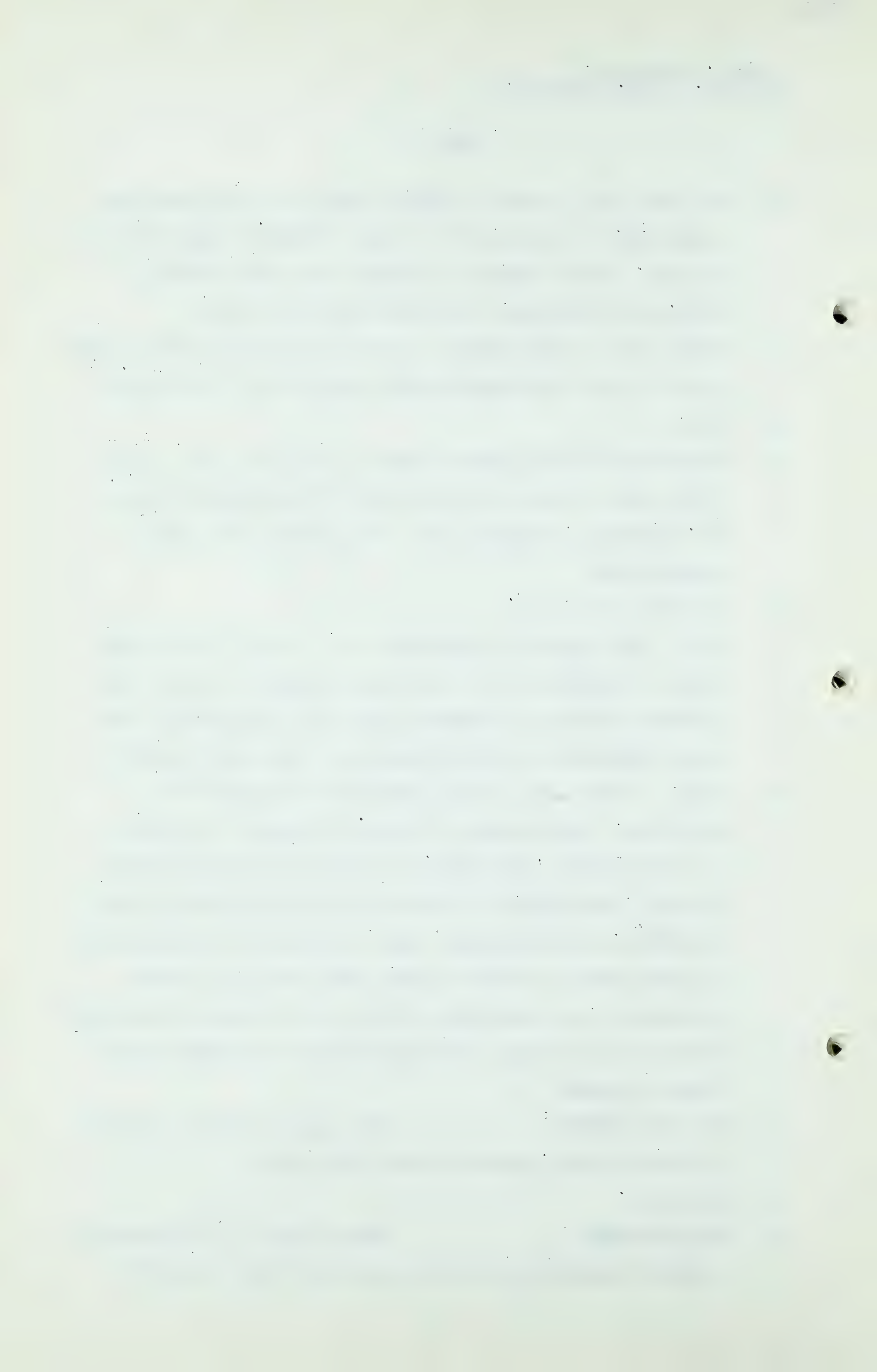
Q Yes. With respect to Appendix III, I wonder if you have made a comparison as to cost per horsepower for the compressor stations as compared again with those which have been submitted in other estimates by other applicants?

A Yes. I have made a rough comparison on compressor stations. Our estimate of \$345.00 compares to \$215.00 on Trans-Canada, and \$250.00 on Prairie on their Western project, and \$225.00 on Prairie on their Eastern project, and \$227.00 on Westcoast. Now, I think that is explanatory to some extent in that we have small stations of 4400 horsepower, and included in this cost is land and employees' housing which is not included in some of the other applicants' figures.

Q MR. C.E. SMITH: The figures are not actually relevant, then, unless we take land, etc.?

A Correct.

Q MR. MARTLAND: Then IV and V, is there any comment required there or do you think they are self-



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Dir. Ex. by Mr. Martland.

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explanatory, Mr. McConnell?

A I think IV and V are self-explanatory.

Q Right. Well, we will proceed, then, to the fourth of these exhibits, Exhibit 111, "Operating Estimates".

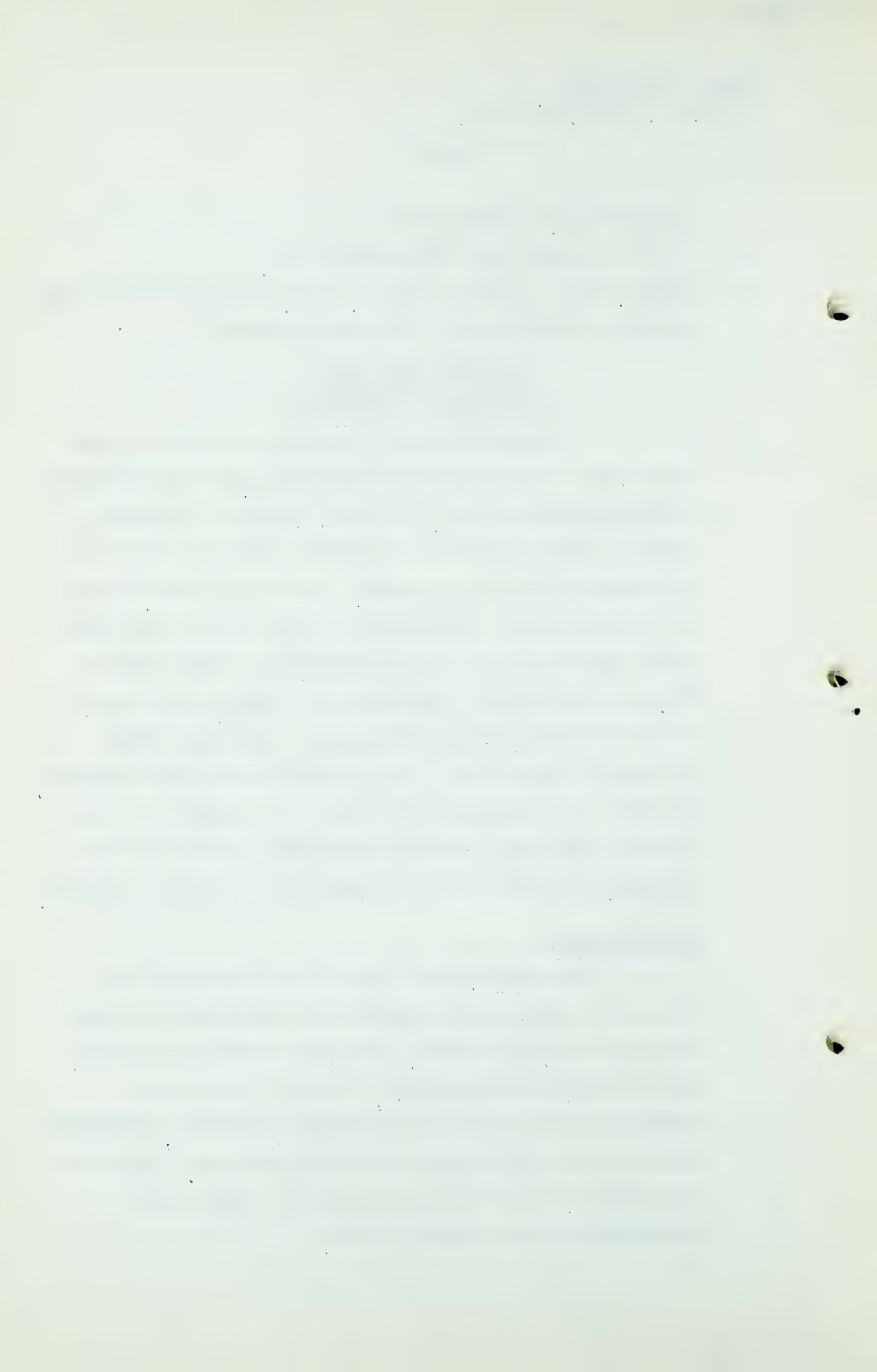
A

WESTERN PIPE LINES
OPERATING ESTIMATES
FIFTH YEAR OF OPERATION

Included herewith as Appendix I are the estimated costs of operation and maintenance, and fixed charges including depreciation, taxes and return on investment which are anticipated for the fifth year of operation of the Western Pipe Lines system. The total of \$20,667,000 is the equivalent of the revenue which Western Pipe Lines would expect to gain from its operation. This averages 27.8¢ per Mcf and is based upon the Company realizing a rate of return of 7% as shown rather than the revenue that would result from a particular rate or rate schedules. When the rates proposed to be used are designed they will probably take into account geographical location of the markets, load factor and the character of service required.

Gas Purchased

Included in this item is the estimated fifth year sales requirement together with unaccounted for gas computed at 0.5% of sales. The cost of this gas is computed at 10.75 cents per Mcf, at which price it is assumed that the gas will be gathered, purified, dehydrated and otherwise made suitable for the pipe line. An allowance of \$30,000 per year is included to cover costs incidental to the purchase of gas.



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Transmission Line Operation and Maintenance

This item includes the labor and other expenses connected with operation and maintenance of the line. The locating of maintenance crews at strategic points along the line is a major factor in this expense. This estimated cost of \$450.00 is based on actual costs incurred on similar pipe lines in the United States.

Compressor Operation and Maintenance

The cost of operating and maintaining the compressors is estimated at an average of \$22 per horsepower including all labor, supplies and expenses other than gas fuel. The cost of fuel is included in the estimate at the estimated field price of 10.75 cents per Mcf.

Measurement

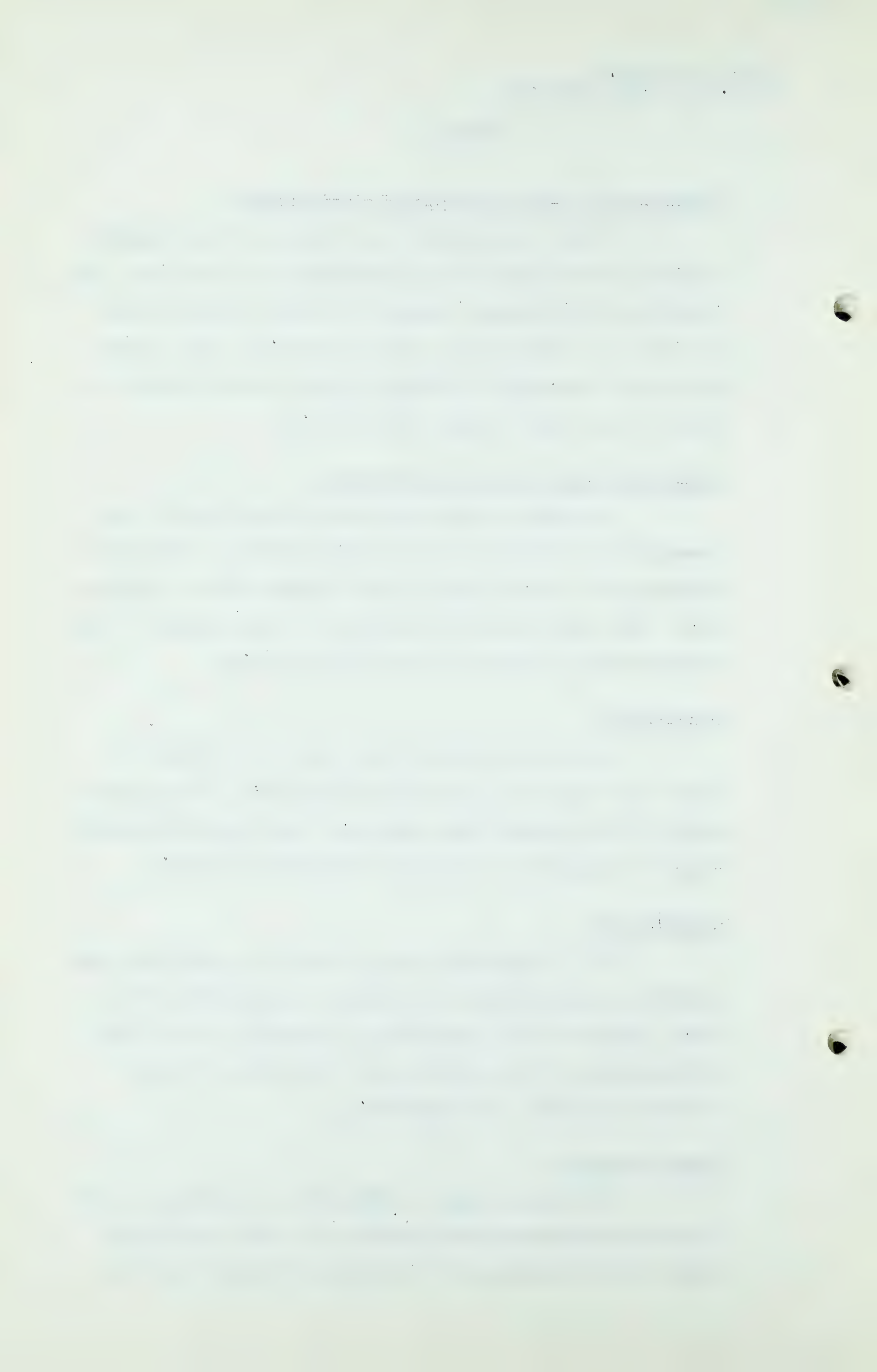
An amount of \$60,000 per year is included to cover the costs of a measurement Department, which department will be charged with operating, testing and maintaining the equipment at the various measuring stations.

Dispatching

It is estimated that the cost of operating a gas dispatching department will amount to about \$100,000 per year, which cost will be made up principally of salaries and expenses of the personnel and the cost of communications applicable to dispatching.

Sales Promotion

An annual amount of \$40,000 is included to cover the cost of salaries and expenses of a small department which would function as a co-ordinator between the Pipe



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Line Company and its customers and also accomplish such public relations work as will be required.

Administration and General

The amount of \$588,000, the equivalent of 40% of operating costs other than the cost of gas purchased covers the general and administrative items of expenses. Included in this classification are salaries and expenses of officers of the company, other general office employees, legal expenses and other fees, rents, pensions and other items of a general nature.

Depreciation

Depreciation is computed at an over-all rate of 3% of investment.

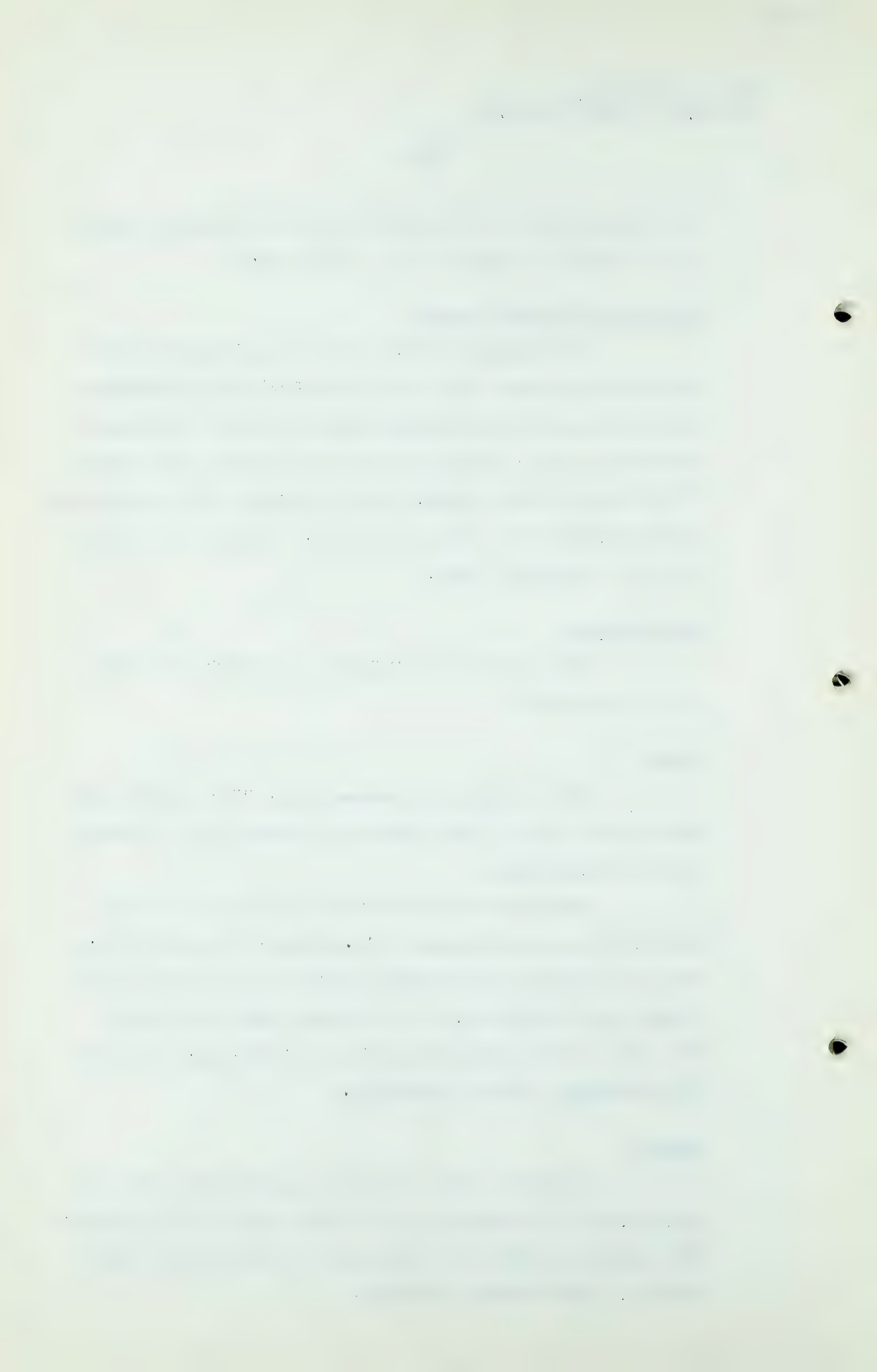
Taxes

Taxes other than income taxes, principally property taxes and pay roll taxes are estimated on the basis of 1% of investment.

Dominion and Provincial income taxes are computed at the current rates of 47.6% and 5% respectively. For the purpose of estimating interest deductions in the income tax computation, it is assumed that the Company will have at the end of the fifth year \$35,940,000 of 4% First Mortgage Bonds outstanding.

Return

A return of 7% on an anticipated rate base of \$63,318,000 is included in the fifth year cost of service. This return is after all expenses of operation and maintenance, depreciation and taxes.



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Dir. Ex. by Mr. Martland.

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Q Have you any comment with regard to the schedule, Mr. McConnell?

A Well, this is a summation of all costs and fixed charges that the company is estimated to incur in the fifth year of operation. As you see, it includes Return and Income Taxes. As I mentioned, the assumption is made that the company will have approximately \$36 million of 4% bonds at that time. The only place that enters into this is in computation of the income tax. At a different rate there is a slight change in there; however, it is not critical.

Q Have you made a computation on the basis of $4\frac{1}{2}\%$?

A On the basis of $4\frac{1}{2}\%$ the total estimated cost of service would be reduced slightly down to \$20,570,000 and that would reduce the unit cost of service from 27.8 cents to 27.7 cents.

Q Now, you have prepared an additional statement called "Estimated Gross Income, Rate Base and Rate of Return", which was just distributed today, Mr. McConnell, and which is, I understand, supplementary to what has been presented in this last exhibit?

A Yes, sir.

Q I think I had better tender that as an exhibit, sir.

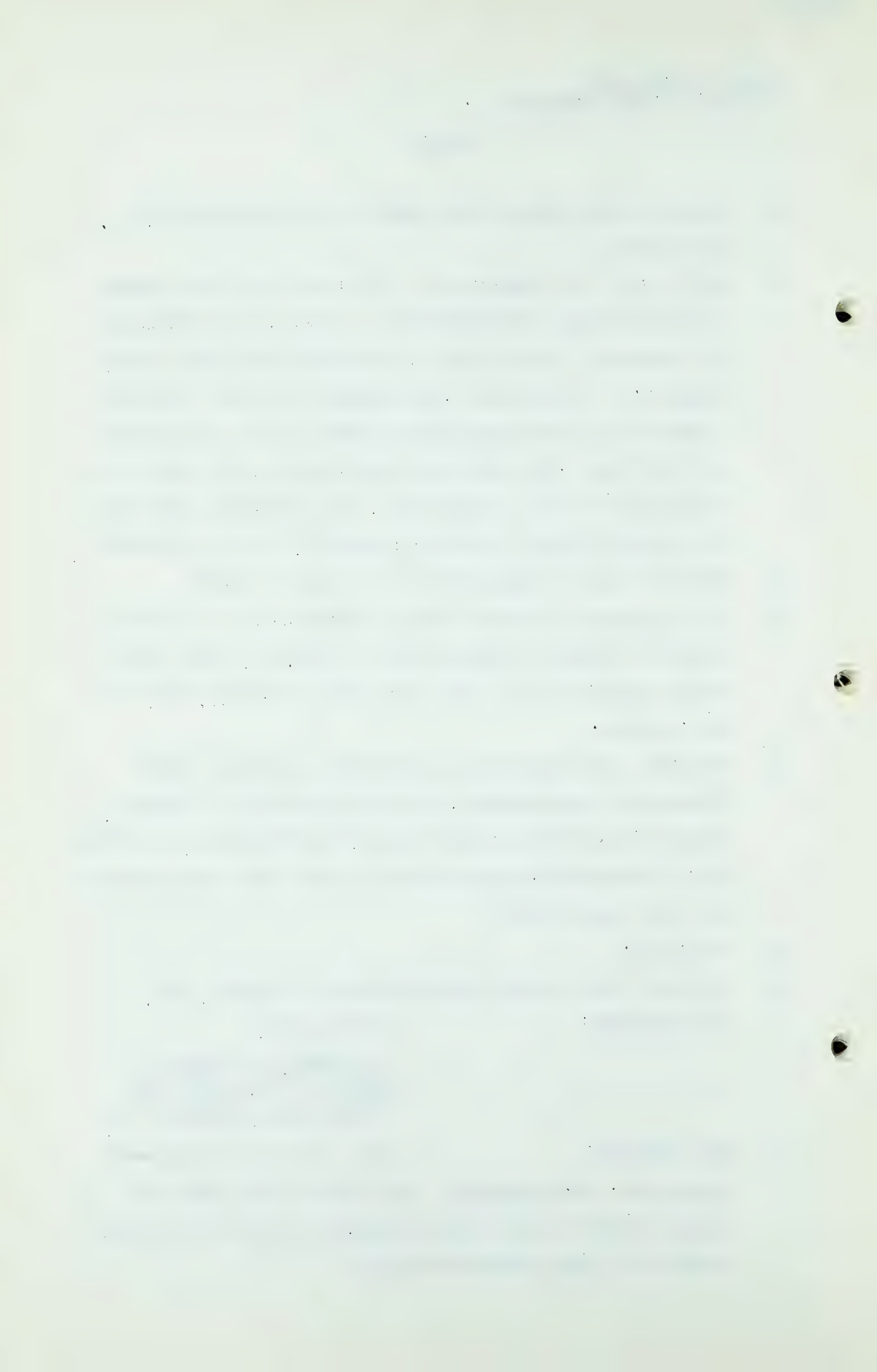
THE CHAIRMAN:

Exhibit 112.

STATEMENT, "ESTIMATED
GROSS INCOME, RATE BASE
AND RATE OF RETURN" PUT
IN AND MARKED EXHIBIT 112.

Q MR. MARTLAND:

Now, evidence has already been given, Mr. McConnell, that actual rates have not been set, but this has been prepared on the basis of what? There is a rate referred to there?



Earl J. McConnell,
Dir. Ex. by Mr. Martland.

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A There is a rate referred to there. That rate is what might be termed an over-all rate or average rate. In other words, if all the customers of Western Pipe Lines were to pay at the same rate this would be of the order which Western Pipe Lines would expect.

Q Yes. And you have assumed that rate for the purposes of making this computation?

A That is correct.

Q And what has been the assumption as to the purchase price of gas in making the computation, the same as in the exhibit?

A That is correct, $10\frac{3}{4}$ cents.

Q Now, is there any particular comment you would like to make with respect to Exhibit 112?

A That is the one that has just been submitted?

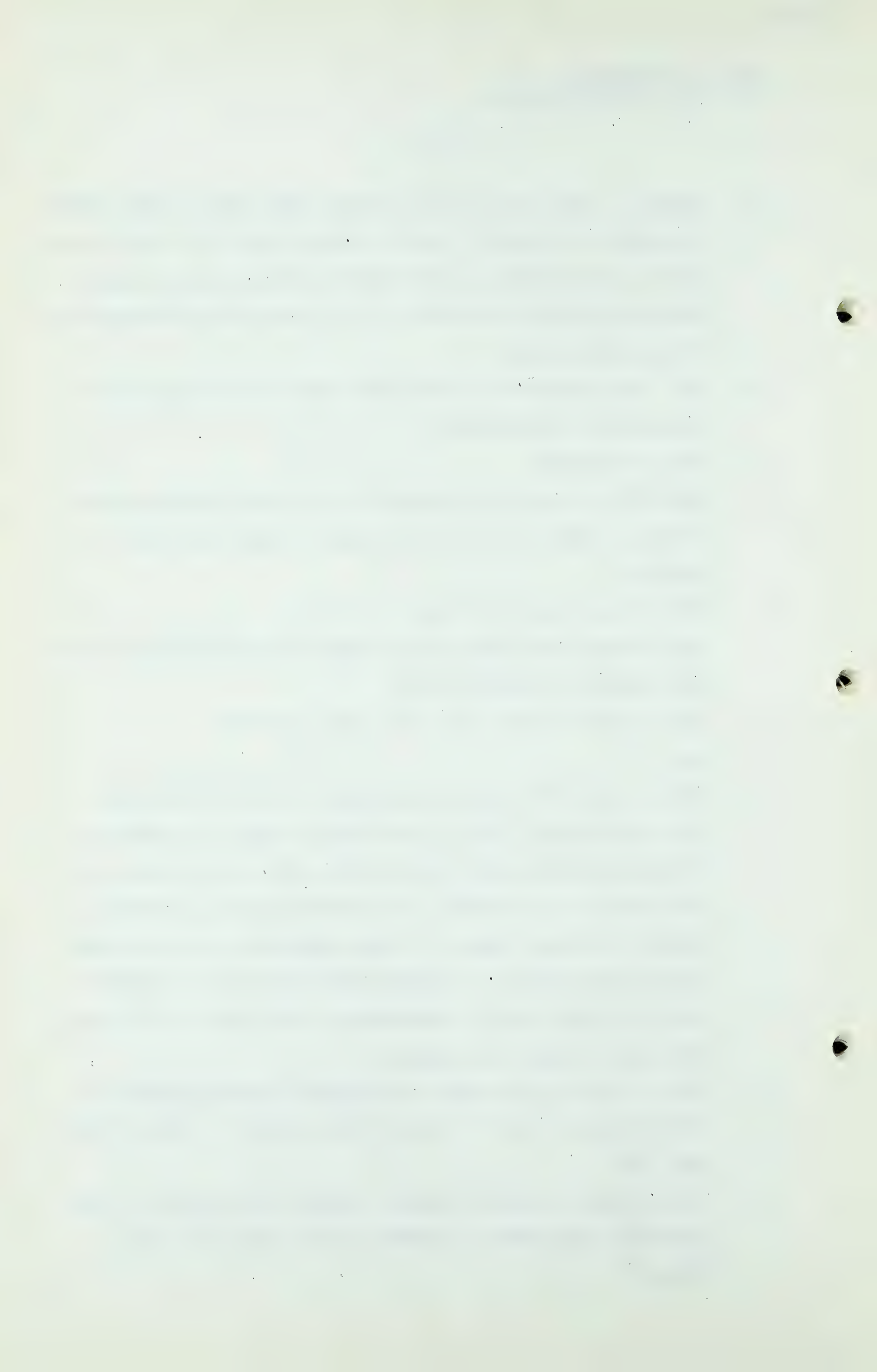
Q Yes.

A Well, as has been said, Western has not yet established its rate policy. This is one form of rate. It would be my recommendation that whatever the rate policy might be that rates be on a demand and commodity basis, commonly called a two-part rate. On this computation here as compared to Exhibit 111 we have used bonds with an interest rate of $4\frac{1}{2}$ per cent as compared to 4 per cent in the other, which does change the figures.

Q That is why you have made the computation with regard to the estimated cost of service with respect to $4\frac{1}{2}$ per cent?

A Yes, sir.

Q And you gave us those figures a moment ago resulting in an estimated cost service per Mcf at 27.7 cents, is that correct?



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Dir. Ex. by Mr. Martland.

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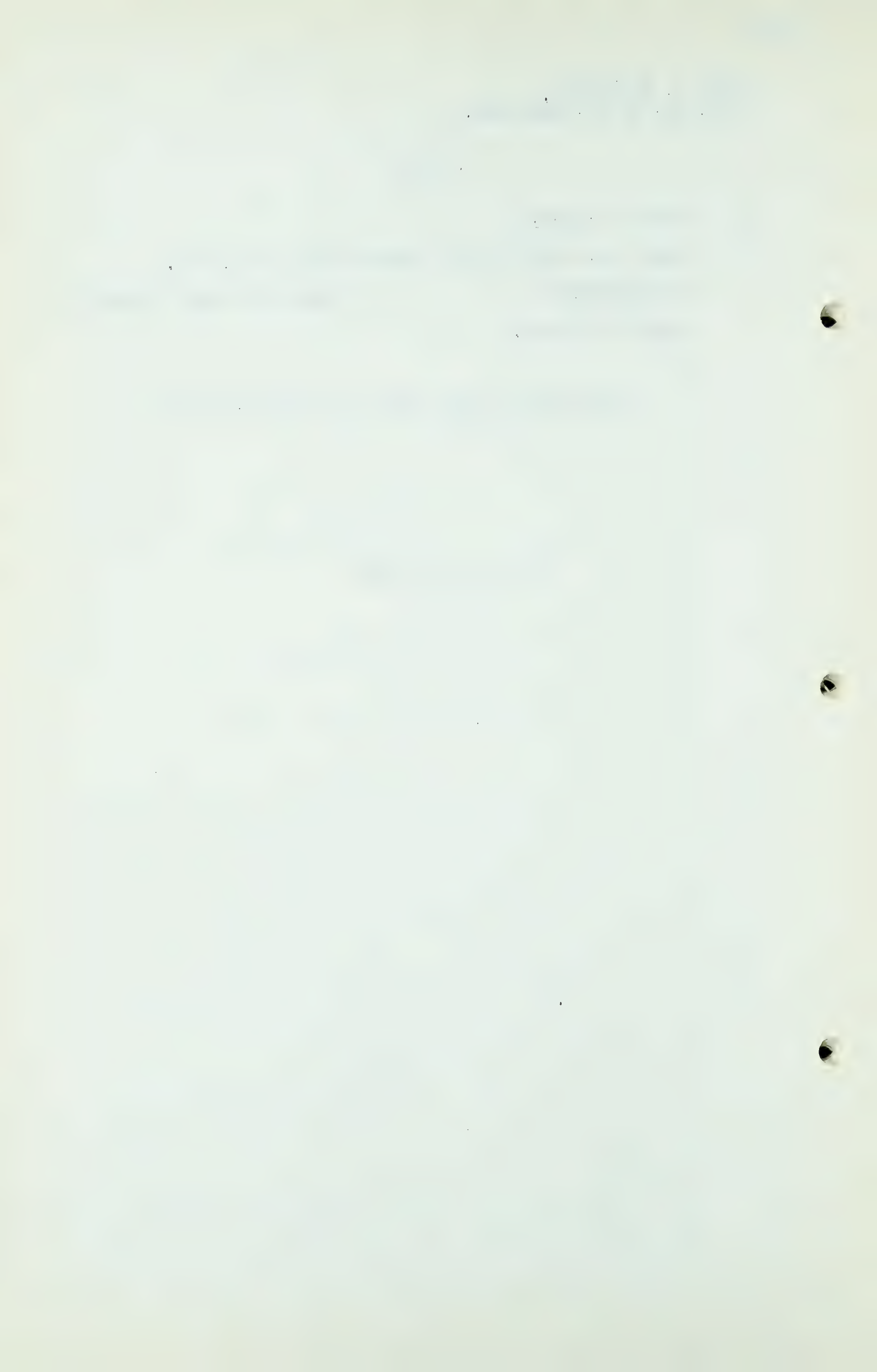
A That is correct.

Q That is all the direct examination I have, sir.

THE CHAIRMAN: I think we might adjourn
until 2 o'clock.

(The Hearing then adjourned until 2:00 P.M.)

(Go to page 3063)



E. J. McConnell,
Cr. Ex. by Mr. Nolan

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2 P.M. SESSION

December 12th, 1951.

EARL J. McCONNELL, recalled, already
sworn, testified as follows:-

THE CHAIRMAN: Does anybody wish to question Mr.
McConnell?

MR.NOLAN: I have just one or two things, Mr.
Chairman.

.....

CROSS-EXAMINATION BY MR.NOLAN:

Q Mr. McConnell, will you please look at Exhibit 108,
page 2, down at the bottom of the page where it says,

"Additional engineering and economic studies are
now in the process of being made regarding alter-
native points of delivery to Northern Natural Gas
Company".

A Yes.

Q Where are those points?

A There were no definite other points established. Northern
Natural had some question whether or not it would like
the point at Emerson.

Q Yes?

A Whether or not they would locate the point at Emerson.

Q Whether they would what?

A Whether they would rather have some alternative point other
than Emerson.

Q Other than Emerson?

A Yes.

Q What I was really anxious to know was, was it in your scheme

E. J. McConnell,
Cr. Ex. by Mr. Nolan

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of things that there might be a point of delivery to Northern on this side of Winnipeg? You see, as it is now, your line goes through Winnipeg and then down south to Emerson?

A That is right.

Q Is there any suggestion of having a cut-off from, we will say, Brandon, or some point like that?

A I do not know just what Northern had in mind when they made that request, as to where they had in mind that other point might be.

Q Well, did you have any part to play in the engineering or economic studies, or would you have, if they are in process?

A We would have if Northern would suggest another point, which they have not done. You see what I mean?

Q There is nothing definite about it?

A No, that is right. I think as far as Western is concerned, that is its point.

Q Before I forget, Mr. McConnell, you talked about the mill price of pipe to your counsel this morning?

A Yes.

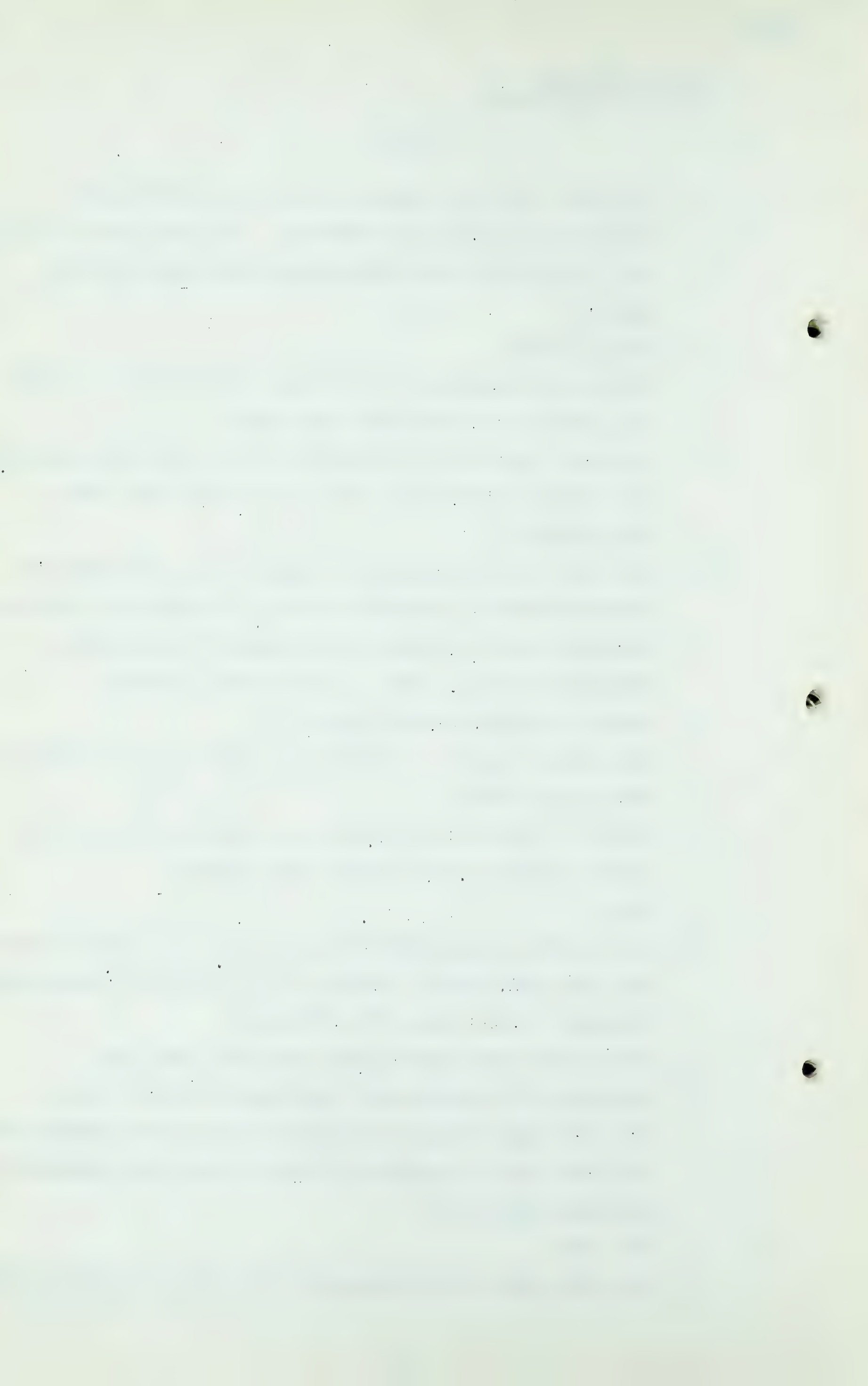
Q And I think you said \$137.50, and I think you said to that you would add \$26.20, giving a total of \$163.70, excluding freight. Is that duty, Mr. McConnell?

A That is the duty and Canadian sales tax, yes, sir.

Q In Exhibit 111, being your Operating Estimates, and on the last page, being your Estimated Cost of the Service in the Fifth Year of Operation, have you that, Mr. McConnell? Have you Exhibit 111?

A Yes, sir.

Q And 112, which is the Estimated Gross Income Rate Base and



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Rate of Return, which was the separate sheet?

A Yes, sir.

Q Which we obtained?

A Yes, sir.

Q Would you tell me, please, what load factor you used in calculating these two estimates which I have referred to?

A Well, they are at the same load factor, that was based on Mr. Whitney's annual volumes and peak days.

Q What is that?

A I do not think it is calculated for all of the years. As I remember, in the fifth year it is approximately 80%.

Q I think that is so, Mr. McConnell. For example, in Exhibit 112, you show the estimated gross income, etc., etc., for every one of the years, from the first year through the fifth year?

A Yes.

Q Would that be the same load factor for each one of those years?

A No, sir, there is a different load factor there for every year.

Q Have we got that in the record now, Mr. McConnell?

A I do not know that we have it as a load factor. We have the peak days and annual volumes, from which the load factor can be computed.

Q That has not been computed?

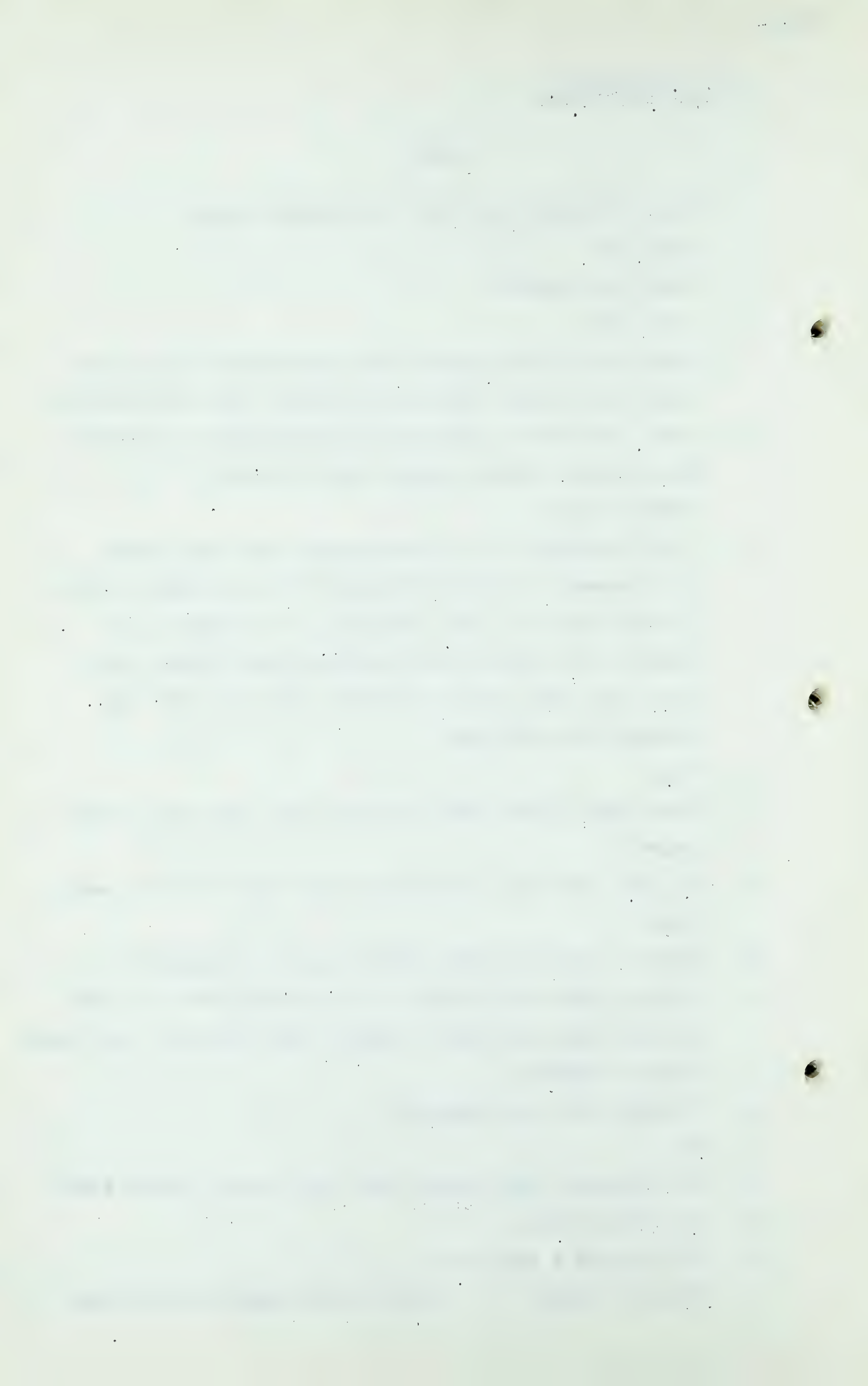
A No.

Q My advisors could compute that quite easily, could they?

A Yes, they could.

Q If they had a slide rule.

MR. C. E. SMITH: Or Mr. Steer could do it for you.



E. J. McConnell,
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Q Mr. NOLAN: There is one other thing, Mr. McConnell, in this same exhibit, lll, I observe on the first page that you propose to buy gas at 10.75 cents per Mcf.?

A Yes.

Q Now, I do not know whether you are familiar with some of the other contracts that have been put in, but they do contain these escalator clauses, so that the price goes up a quarter of a cent every year during the first five years?

A That is right.

Q Have you any idea of paying more than 10.75 cents per Mcf. in the succeeding years, Mr. McConnell, or is that a flat rate?

A Well, I think the project could afford to pay more.

Q But the present idea is to pay that amount as a flat rate throughout the period?

A For a flat rate for four or five years.

Q Regardless of the fact that other witnesses here have said that this escalation rate would be acceptable to them, you still maintain that you will adhere to the 10.75 for the first five years?

A Well, that is the figure on which these figures are based. Now, I would not go so far as to say that the project would not support a higher rate.

Q But would it be fair to say that the 10.75 was the figure given to you upon which to found your estimates?

A Yes, sir.

Q There was just one other point that perhaps you might clarify for me. In Exhibit lll, on page 3, you say, Mr. McConnell,

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".....it is assumed that the company will have at the end of the fifth year \$35,940,000.00 of 4% first mortgage bonds outstanding."

And then in the last note in Exhibit 112, we have the statement,-

"Interest on \$47,000,000.00 in bonds at $4\frac{1}{2}\%$ used in computation of estimated income taxes."

Why is there that difference, Mr. McConnell?

A Well, that is a difference in the financing plan on those two schedules. I think I explained that before, that one is calculated on a 4% interest rate, and the other on a $4\frac{1}{2}\%$ interest rate, and I think I explained that this morning.

Q Well, which one are we to use, Mr. McConnell?

A Sir?

Q Do we use the 4% or the $4\frac{1}{2}\%$? You use the 4, you did, didn't you?

A The 4 is used in Exhibit 111, yes, sir.

Q And in Exhibit 112 you use $4\frac{1}{2}\%$?

A That is correct, sir.

Q Well, then, you have \$35,000,000.00 odd in Exhibit 111, and \$47,000,000.00 in 112, and wherein lies the difference?

A The \$47,000,000.00 is the initial bond issue in Exhibit 112.

Q And the \$39,000,000.00 is what is remaining outstanding at the end of the fifth year?

A That is right, after retirement.

Q After the retirement?

A Yes, during the first years.

MR. C. E. SMITH: You keep on going, Mr. Nolan, and I won't have anything left to ask.

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Cr. Ex. by Mr. Nolan
Cr. Ex. by Mr. Macleod.

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MR. NOLAN: Well, we might, perhaps, save time
by that, Mr. Smith.

Q In Exhibit 112, under note 2, Mr. McConnell, and perhaps
I should not even have to bother you about this, is that
amount of \$47,000,000.00 used throughout the period? I
ask that, Mr. McConnell, because it seems to me that it is
used right across that line of income tax, including Provin-
cial taxes on income?

A No, sir, that is reduced in each year.

Q That is reduced in each year?

A Yes, sir.

Q Until the end of the fifth year where at the end of that
fifth year you get down to our friend, the \$39,940,000.00

A I think that is right, sir.

Q Thank you, Mr. McDonnell.

THE CHAIRMAN: Mr. Smith, have you anything?

MR. S. B. SMITH: No, I have not, sir.

.....

CROSS-EXAMINATION BY MR. MACLEOD:

Q Mr. McConnell?

A Yes?

Q Referring to your Exhibit 109, and your two Appendices,
1 and 2, and particularly 2, you give peak load purchases
and sales?

A Yes, sir.

Q You have nothing corresponding to that to show the annual
purchases and sales?

A No, sir, I do not.

Q So that you do not know how these figures in Appendix 4, in
Exhibit 106, are broken down as far as purchases are concerned?

E. J. McConnell,
Cr. Ex. by Mr. Macleod

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A That is right, there was no breakdown made on that, since they are of the same rate for all gas purchases.

Q Can you tell me whether you show that with regard to your peak purchases in the fifth year, whether you take anything from Pakowki Lake?

A Pardon?

Q Do you know if you are taking anything from Pakowki Lake on the peak day load?

A Well, as I say, I made no annual figures by fields, but I would certainly think that a substantial annual volume could be taken.

Q You have no idea what you would propose to take?

A No, sir, I do not believe I would have.

Q It is not in any of these other exhibits anywhere?

A I do not think it is. The over-all load factor being some 80% in the fifth year, I think it would not be too unreasonable to have something on that same order for the purchases from each of the several fields.

Q Mr. McConnell, your scheme is more or less dependent upon you getting Pincher Creek as the main source of supply?

A Yes.

Q That is true of several other applicants?

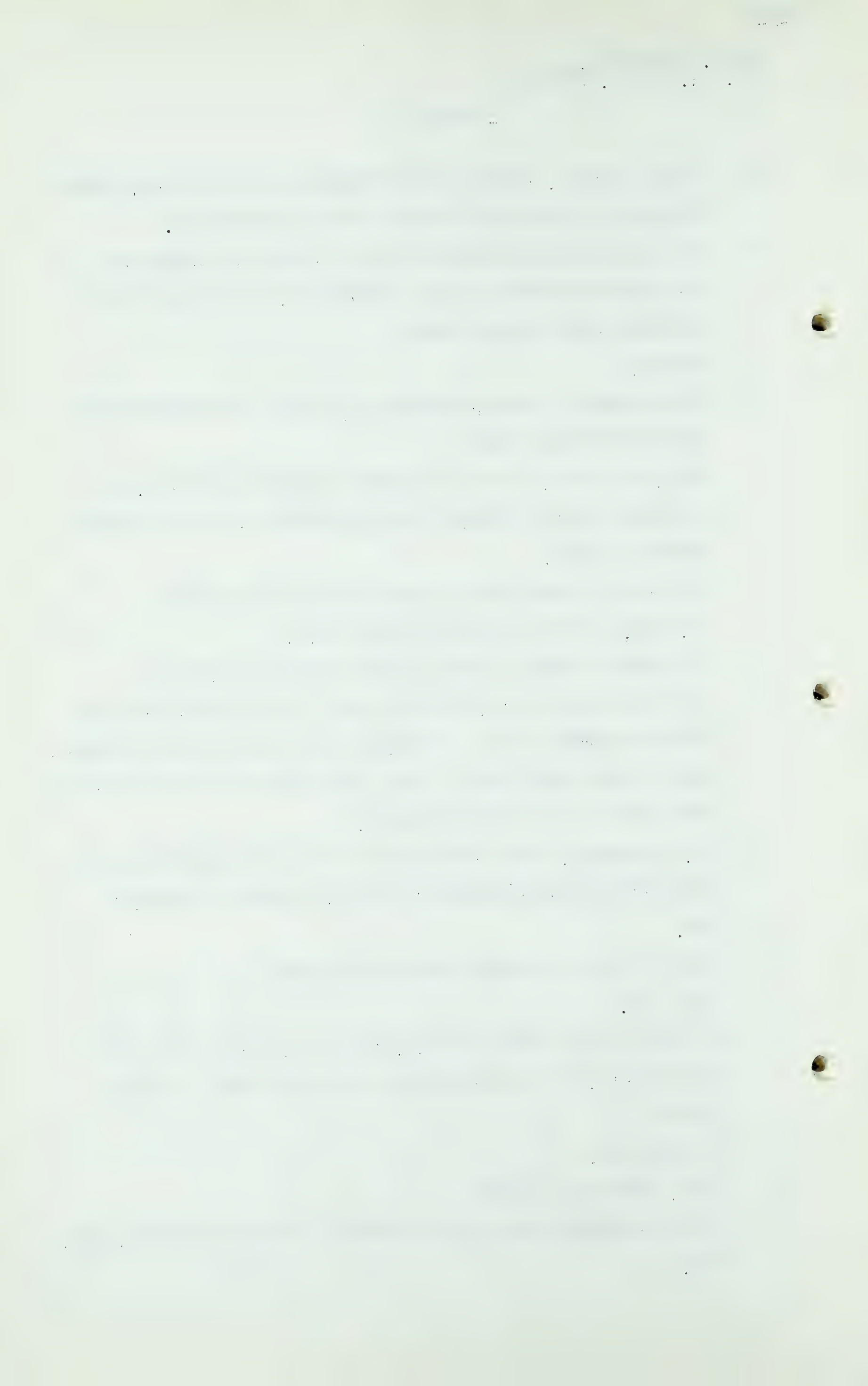
A Yes, sir.

Q So that it is correct to say, isn't it, that if you get your permit, as you ask, that some others will not get theirs?

A It might be.

Q Well, isn't it a fact?

A At the present stage of development I would assume so, yes, sir.



E. J. McConnell,
Cr. Ex. by Nr. Macleod

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Q I mean, in the schemes as presented to the Board?

A Yes, sir.

Q Now, I do not know whether you are familiar with an exhibit that has been put in by Northwestern, showing their grid system, showing that they expect to get some gas from a group of fields in southeastern Alberta, Princess, Cessford and some others?

A I do not think I am familiar with that exhibit, sir.

Q I thought I had it here a moment ago. Here it is. You will notice the gathering system of the Alberta grid, the Alberta Western Grid?

A Yes, sir.

Q Which gathers from a number of fields, Cessford, Princess and so on?

A Yes, sir.

Q And also Dunmore?

A Yes, sir.

Q Now, assuming that you get your permit on the scheme that you suggest, that whole group of fields would be left without a market at all, wouldn't they, except a problematical one from Canadian Western? I mean, there is no scheme before the Board other than that one which would provide for a market for those particular fields?

A Well, that I do not know.

Q You know of none?

A No, sir.

Q Might I suggest to you, referring to your Exhibit 108, and to your map contained in that exhibit - before I ask that question, what is this little angle east of Pincher Creek?

A That is a proposed dam on the St. Mary's River there, which

E. J. McConnell,
Cr. Ex. by Mr. Macleod

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the line was moved around.

Q Now, might I suggest to you, Mr. McConnell, that if you take a more or less straight line from the next angle to Dunmore, which is just south of Medicine Hat, and then carry it on to Many Islands, eliminating Pakowki Lake, that you would be in a position, having received a permit, to afford a market for that group of fields which I have mentioned, and, in addition, to shorten your line fairly materially?

A Let me see if I get your question.

Q I have it marked down here in pencil?

A I see.

Q If you took the line, and instead of going southeast you went northeast in a direct line, through Dunmore which is just out of Medicine Hat, and then on to Many Islands, you would get the same facilities that Northwestern are now getting at in these fields, and you would be able to take gas from them?

A Yes, it appears so.

Q And in that case you would not require Pakowki Lake, would you?

A I am not familiar with the reserve picture there, to that extent that I can say.

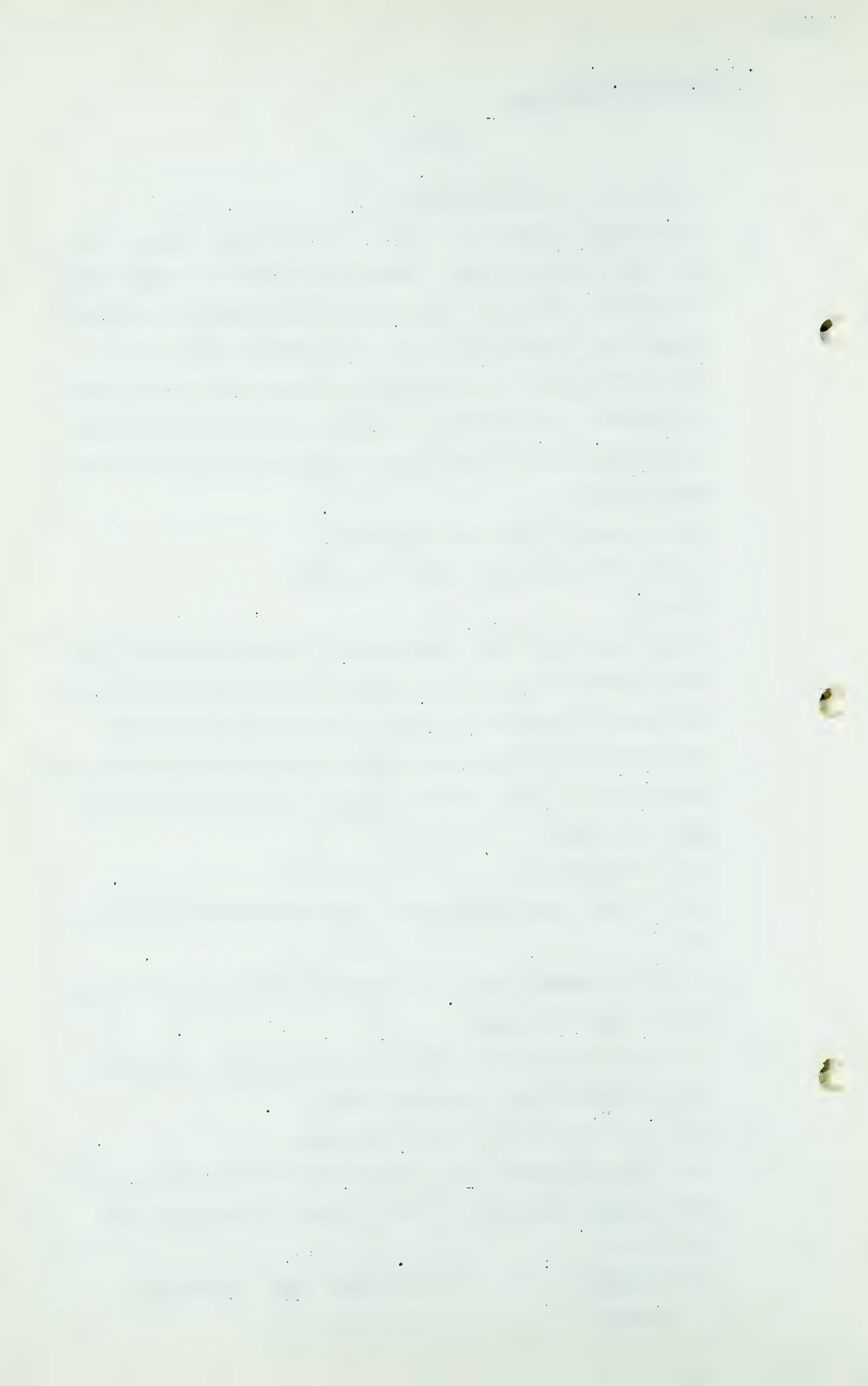
Q And there is one other fact, too, isn't there, that you would shorten your line quite a bit?

A Yes, sir, that would shorten the line.

Q And those gathering lines, according to Northwestern, are smaller than the 24-inch lines, there is a 16-inch, 12 $\frac{3}{4}$ and so on.

THE CHAIRMAN: Mr. McDonald, any questions?

MR. McDONALD: No questions, sir.



Earl J. McConnell,
Cr. Ex. by Mr. Milvain.

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CROSS-EXAMINATION BY MR. MILVAIN:

Q I have just one question, Mr. Chairman. I noticed, Mr. McConnell, on looking at your estimated costs which appear in exhibit 111, apparently no provision has been made for communication costs. You would probably use a micro-wave or something?

A Yes, that is general plant at the end, I think.

Q Would you have that included in the 5 and-a-fraction per cent for contingencies, is that the idea?

A No.

Q It might have been there but perhaps I did not see it.

A Appendix I.

Q Appendix I of Exhibit 111, is it?

A Yes, sir. No, I am sorry. You are talking about operating estimates.

Q Yes, that is right.

A I do not have communications set out separately. What I have done there is to assume that accountingwise the company would divide up the communication expense between transmission, measuring and so forth.

Q There would be some item there that is included in other items?

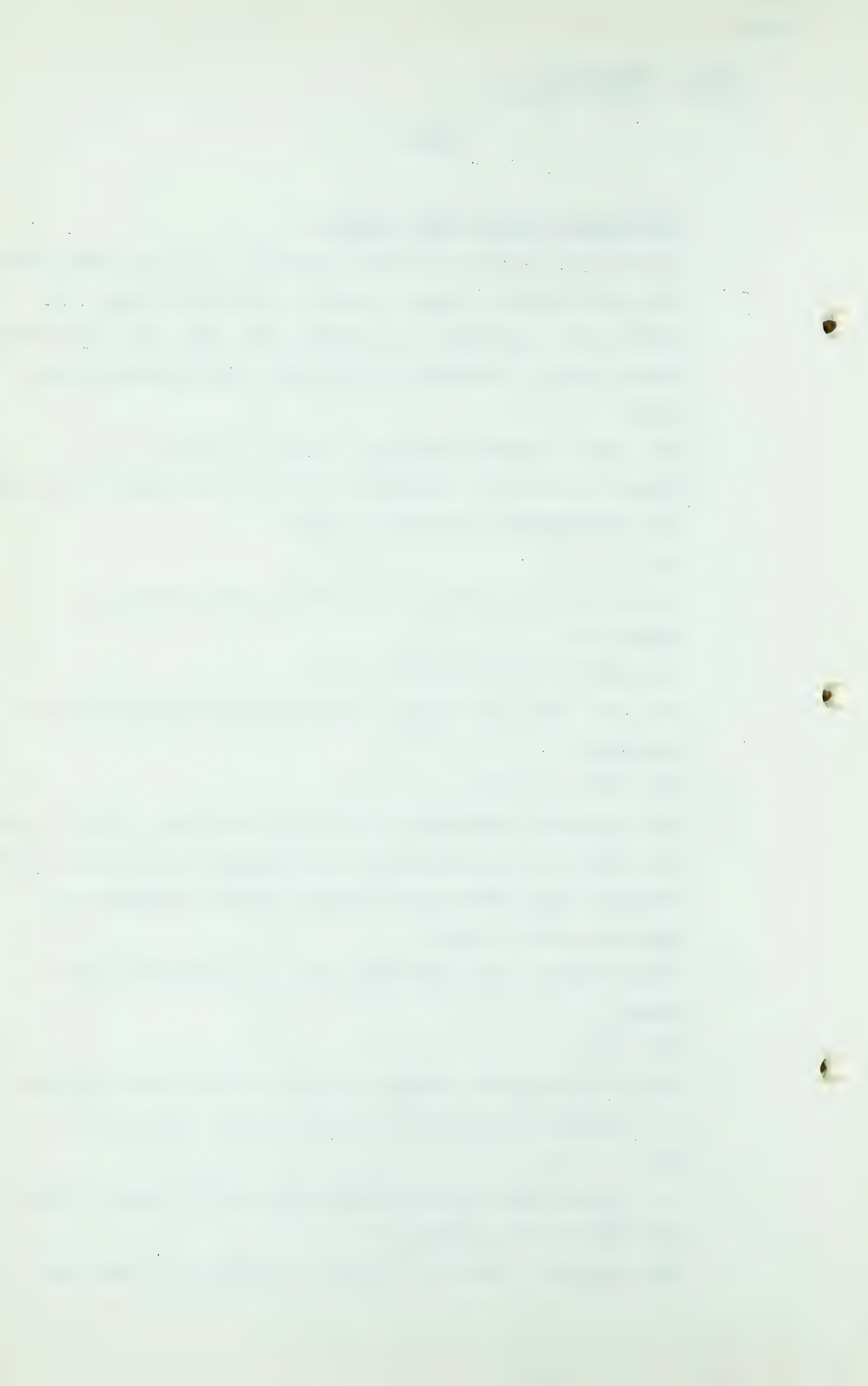
A Yes, sir.

Q Another thing that occurred to me is that you add the price of compressor fuel at 10.75, which is your field price . . .

A Yes.

Q . . . there would be some transmission cost to get it from the field to the compressor?

A That is true. There is the cost of getting it from the



Earl J. McConnell,
Cr. ex. by Mr. Milvain.

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field to the compressor. However, that cost is really reflected in the additional horsepower you have to operate to get the compressor field further up the line. You see what I mean?

Q Would it not be proper to take into consideration some transmission cost and charge the compressor station with that cost as fuel?

A That would be done if you give proper credit for your gas purchases.

Q It is a matter that should be considered?

A In the over-all our costs in the field are corrected to that.

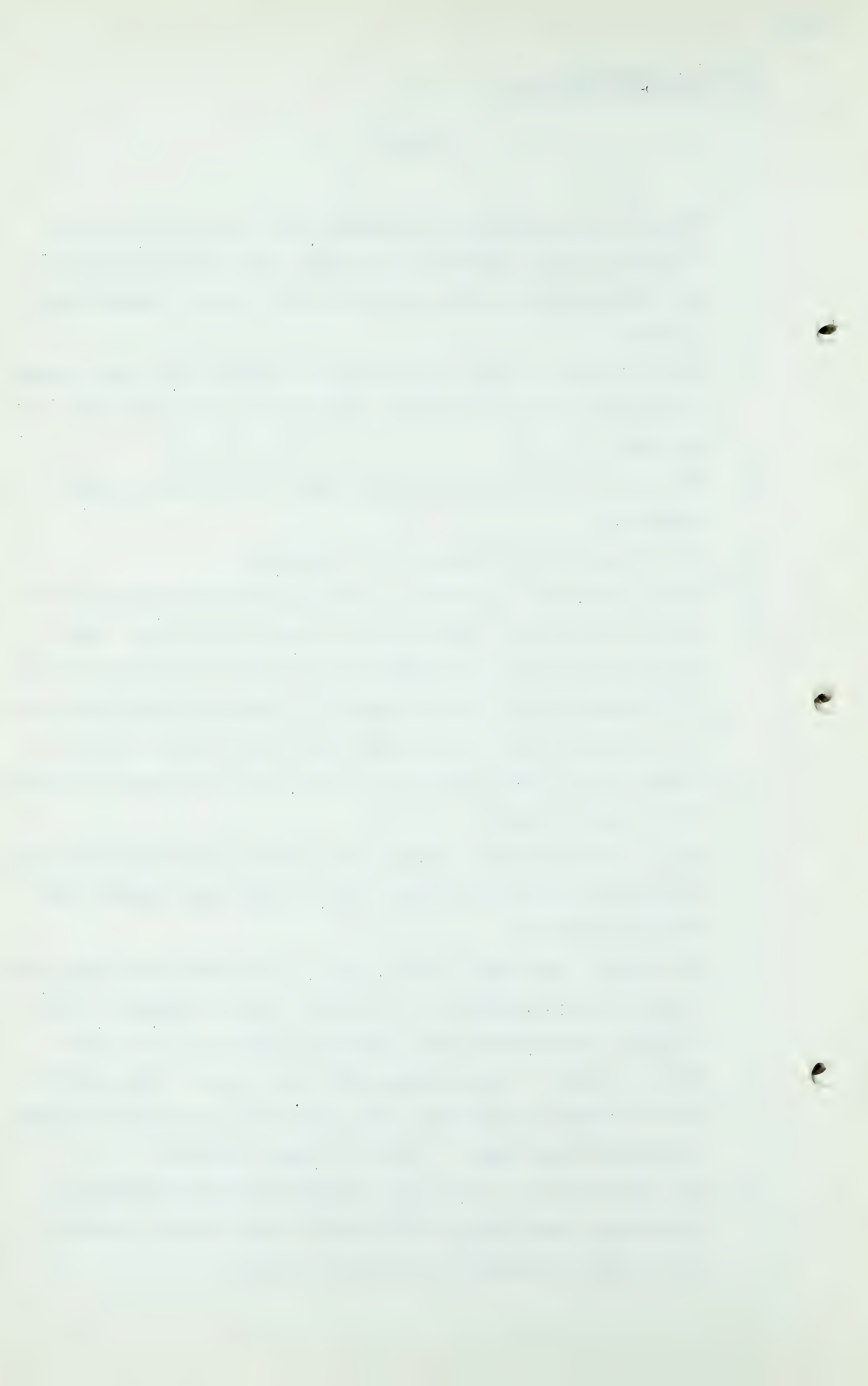
Q There is one other question that occurs to my mind. When you were talking to Mr. Macleod about the Pakowki Lake field, is it the proposal of the company you represent that they will be taking gas from the Pakowki field right along, or are you going to wait until the end of this five years' special permit before you get any?

A Well, I do not know. I think with Pincher Creek gas and Many Islands Lake gas that enough could be obtained without the Pakowki Lake gas.

Q The reason I ask that is the first of your two schedules deals with peak requirements and indicates you were going to take, I think it was 15,020 from Pakowki during the first year?

A That is right. That is shown that way, and of course as far as the design is concerned that could just as easily be taken from Many Island Lake. On the design, therefore . . .

Q In other words, if you could not get gas from Pakowki Lake by making a deal with Mr. Macleod and his clients you will have to get it elsewhere, is that the idea?



Earl J. McConnell,
Cr. Ex. by Mr. Milvain.
Exam. by Mr. C. E. Smith.

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A I presume so.

Q You might have to deal with Mr. Mahaffy's interest, but otherwise you would have to move around and find some other field in Alberta and perhaps change your whole project of gathering?

A Well, if the company is going to sell this much gas, they would have to get it somewhere, of course.

EXAMINATION BY MR. C. E. SMITH:

Q Mr. McConnell, what you call your lateral to Saskatoon, does that by any chance follow the railroad between Regina and Saskatoon?

A I have not been over that and I cannot tell you if it does follow the railroad.

Q Do not bother too much if you haven't it. All I have in mind is the possibility of service to the various towns on that line, that they used to call the Prince Albert line. Has that been considered at all?

A Yes, sir, it has been considered and I think I can, if I have it here, give you a list of those towns.

Q Lumsden and Davidson, etc.?

A Well, sir, it goes by Lawson and Elbow and Loreburn, Hawarden and Dundern and into Saskatoon.

Q Is it sufficiently close to some of those communities that if the community desired and had the facilities for taking gas, that they could be served?

A Yes, there were several of those that could be served, I think.

Q That is enough, Mr. McConnell. Now, referring to exhibit 110, Estimated Cost of Construction?

Earl J. McConnell,
Exam. by Mr. C. E. Smith.

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A Yes, sir.

Q At the second page. No, Mr. Nolan has dealt with that. With respect to the second paragraph headed "Compressor Stations", you dealt with that with Mr. Martland this morning. I want to make certain I understand it here. Your \$345 per horsepower, including land, all equipment, buildings, water supply and employee housing. If I understood you correctly, if that figure of \$345 is to be compared with other people's figures that land, equipment, etc. should be deducted from your figure, is that correct?

A That is right, to get them on the same basis. Either deducted from here or added to theirs.

Q Have you any working figures that will give the deduction for land, equipment and those things you have mentioned?

A I can give you an approximate figure, I think.

Q If you could give me the total for all of those it would help?

A Well, per station we have employee housing estimated at \$40,500. I do not have the lines separated here, but I would estimate about \$5,000 average per station for the line.

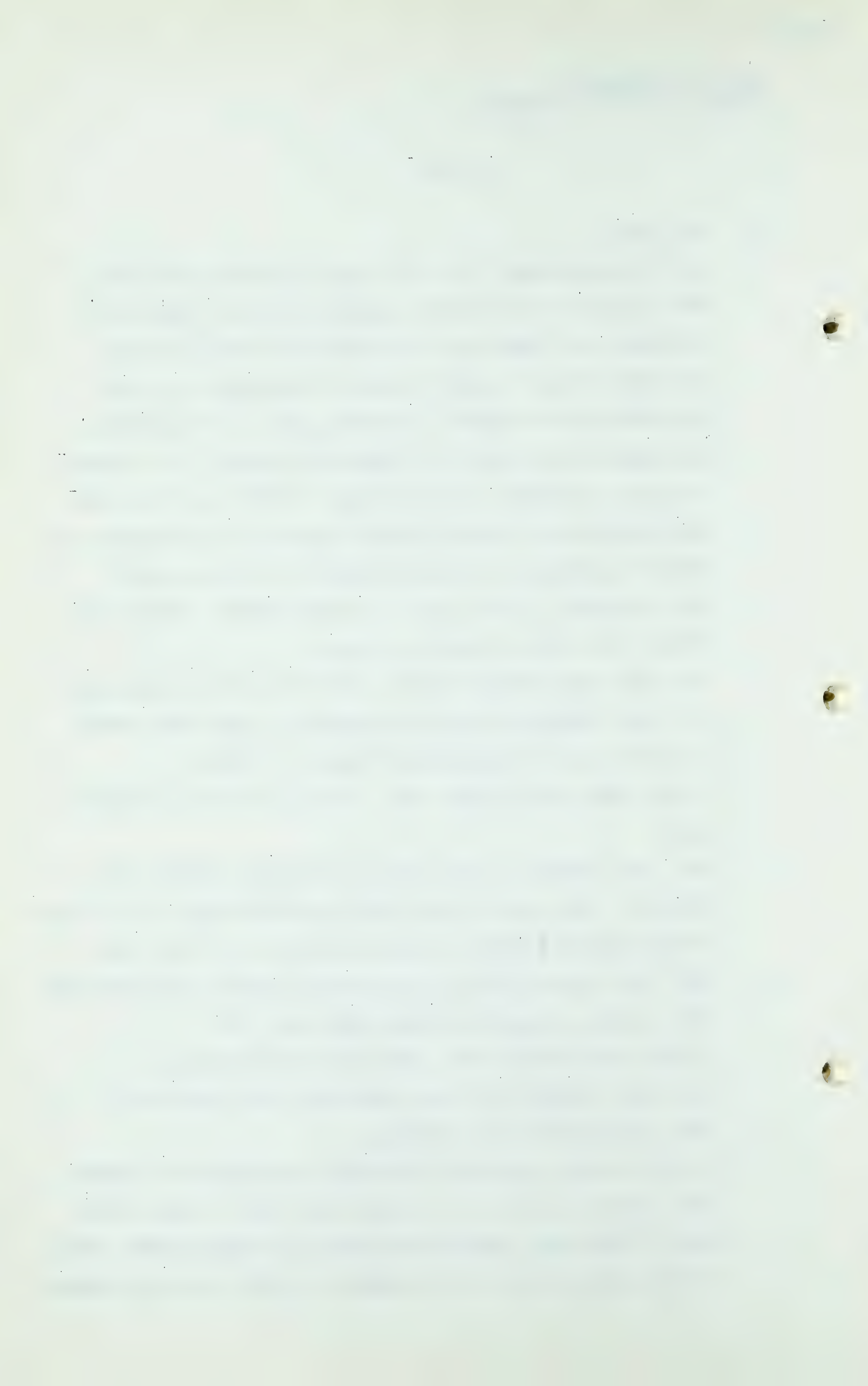
Q What I am trying to get at is how much we will take off the 345 to get a comparable figure with, say 215?

A I would say from \$10.00 to \$15.00 per horsepower.

Q Does that include all those things you have mentioned?

A That includes land and housing.

Q You have land, equipment, buildings and employees' houses. What I want to get at is a figure that would compare with your 215 that you yourself mentioned for Trans-Canada. We do not want to have you considered as being too high because



Earl J. McConnell,
Exam. by Mr. C. E. Smith.

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you have included something that they have not got.

A I think it would range from \$10.00 to \$15.00 to make it comparable.

Q I am going to the bottom of that same page, Mr. McConnell, the second last paragraph.

"An allowance of 6% has been included for interest during construction and other general overheads applicable to the project."

Can you tell us what other general overhead is included, if any? Will you?

A I can tell you the type of items that does include. That is time charged by officers and other executives of the company, for instance, during construction. That is time charged to construction, together with other expenses, office space.

Q I can put it this way. Would it mean the same thing as other people have described as organization and management?

A That would include that, I think, yes, sir.

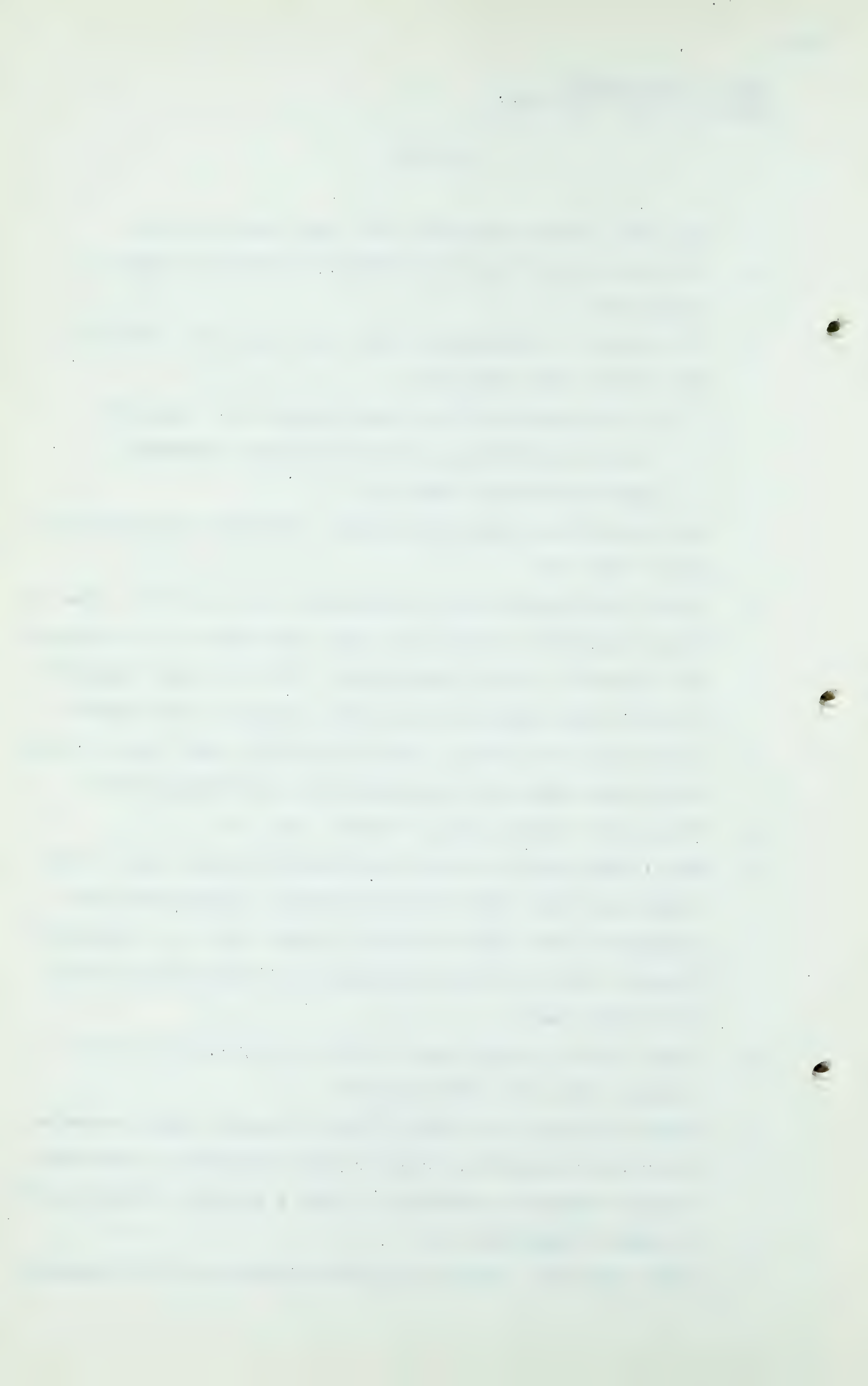
Q Why I bring that up is my recollection is that most of the others add about 5% interest and 3% for organization and management, the total being 8%. Would that be a comparative figure to your 6 or not, or should be comparative, I will put it that way.

A Well, it is a little hard for me to say because I am not familiar with the other figures.

Q Would the term that some of them have used, namely organization and management, bring to your mind what you have when you say "general overhead", is that a fair way of putting it?

A I think it might be, yes.

Q Right you are. Would you look at exhibit 111 for a moment,



Earl J. McConnell,
Exam. by Mr. C. E. Smith.

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and the first page thereof and the second paragraph. You say that with "unaccounted for gas computed at .5% of sales." I am advised that other people have used a percentage of 1% there and I was wondering if your $\frac{1}{2}$ % is from experience of similar types of things, or can you illustrate it for us and explain it?

A I think it is pretty much from experience. Actually, on a new pipe line, well coated and well protected, I would not expect any leakage of any consequence. The only place your unaccounted will show up will be in errors in measurement, which could be in either direction. There are certain pipe lines I know that show a red figure for "unaccounted for" and others show a black. In newer lines it is very close to zero.

Q If we find the difference I have suggested, that is a matter of judgment from experience, is it, Mr. McConnell?

Q There is nothing in particular that would have you put your $\frac{1}{2}$ % here and 1% if you were examining on some other applicant's submission?

A No, sir.

Q In the same paragraph your allowance of \$30,000 to cover the cost incidental to the purchase of gas, would you just illustrate what is included in that?

A I think that might be a small department, consisting probably of two or three people.

Q That is rather a general figure?

A That is right. It is more of an allowance than anything else.

Q Will you turn to page 3 of the same exhibit, lll. We have

Earl J. McConnell,
Exam. by Mr. C. E. Smith.
Cr. Ex. by Mr. S. B. Smith.

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already found 47 million for your bonded indebtedness to begin with, haven't we?

A Yes.

Q Through Mr. Nolan. Your last paragraph, "a return of 7% on an anticipated rate base of \$63,318,000", roughly how much of that is working capital, Mr. McConnell, will you tell us?

A I do not know that I have that breakdown right here. I can tell you how it was computed. It was computed as 12½% to direct operating costs, other than the cost of gas.

Q Can you ascertain it by examining your figures there, Mr. McConnell?

A I think I can give it to you approximately. It would be about \$200,000.00, in that order. That is strictly working capital. That is not counting new materials and supplies.

Q When you say "plus or minus" you mean . . .

A . . . between 180,000 to 220,000 dollars, in that range.

CROSS-EXAMINATION BY MR. S. B. SMITH:

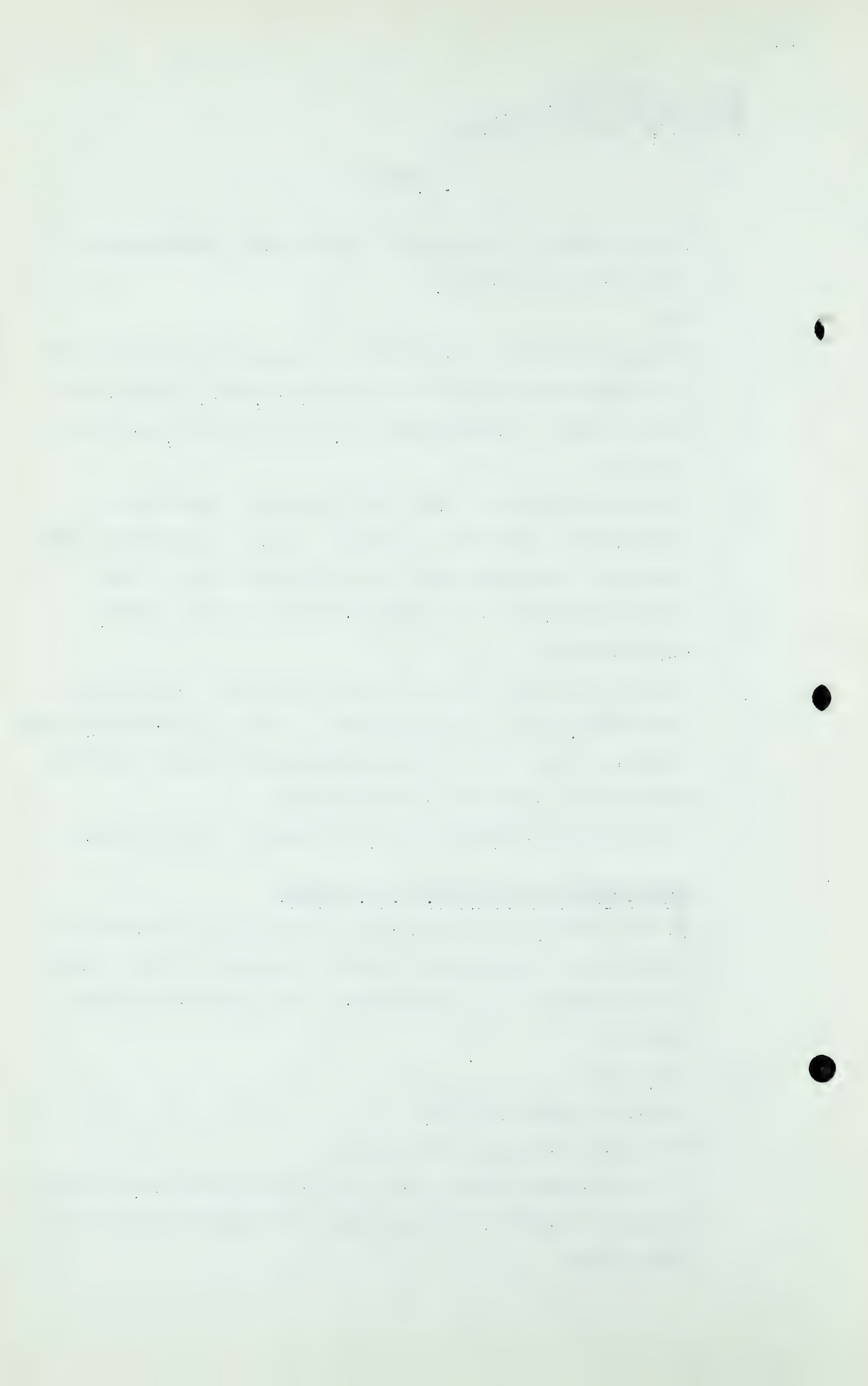
Q Mr. McConnell, is contraction and expansion by reason of variation in temperature between summer and winter a matter of importance in the construction of a pipe line in this country?

A Yes, sir.

Q How is it taken care of?

A By putting slack into the pipe.

Q Is it advisable to bury pipe carrying natural gas, or would you lay it right on the surface? Is it safe to lay it on the surface?



Earl J. McConnell,
Cr. Ex. by Mr. S. B. Smith.

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A That I would not know. I have never seen any large lines laid on the surface.

Q You have never heard of one?

A I have smaller lines.

Q Would the contraction and expansion be greater if the pipe line was uncovered than if it was buried, in accordance with the general practice you have described?

A I think it would be greater above ground.

Q And a greater risk than ordinarily?

A Probably not if it was properly compensated for in expansion bands.

Q You would not ordinarily recommend it, would you?

A Well, it is something I would rather not give a snap judgment on.

Q If it can be done that way, why don't they all do it that way?

A For one reason. Much pipe line is laid through agricultural country where it would not be advisable to lay it on top of the ground.

Q And you would not suggest it is advisable to lay a large pipe line on the surface, even in country which is not agricultural country, would you?

A I do not know whether I would or not, without study. It is a new problem.

EXAMINATION BY DR. GOVIER:

Q Mr. McConnell, with reference to exhibit 108 and the route of the line. Can you tell me whether the route through the Province of Alberta was selected with any reference to the possibility of serving Alberta communities?

A No, sir, I do not think that it was. There are, I think,

Earl J. McConnell,
Exam. by Dr. Govier.

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about three that could be served economically from the line.

Q I notice the route takes one zig and one zog in Southern Alberta, and I wondered if that was the reason, serving Alberta communities?

A No, that was to avoid the lake that is proposed on the St. Mary's river. I can give you the towns that could be served.

Q Would you do that, please?

A In Alberta there are four, Cardston, Magrath, Raymond and Warner.

Q Is it the intention of the Western Pipe Line to serve those communities if they wish service?

A Yes, sir, I think so.

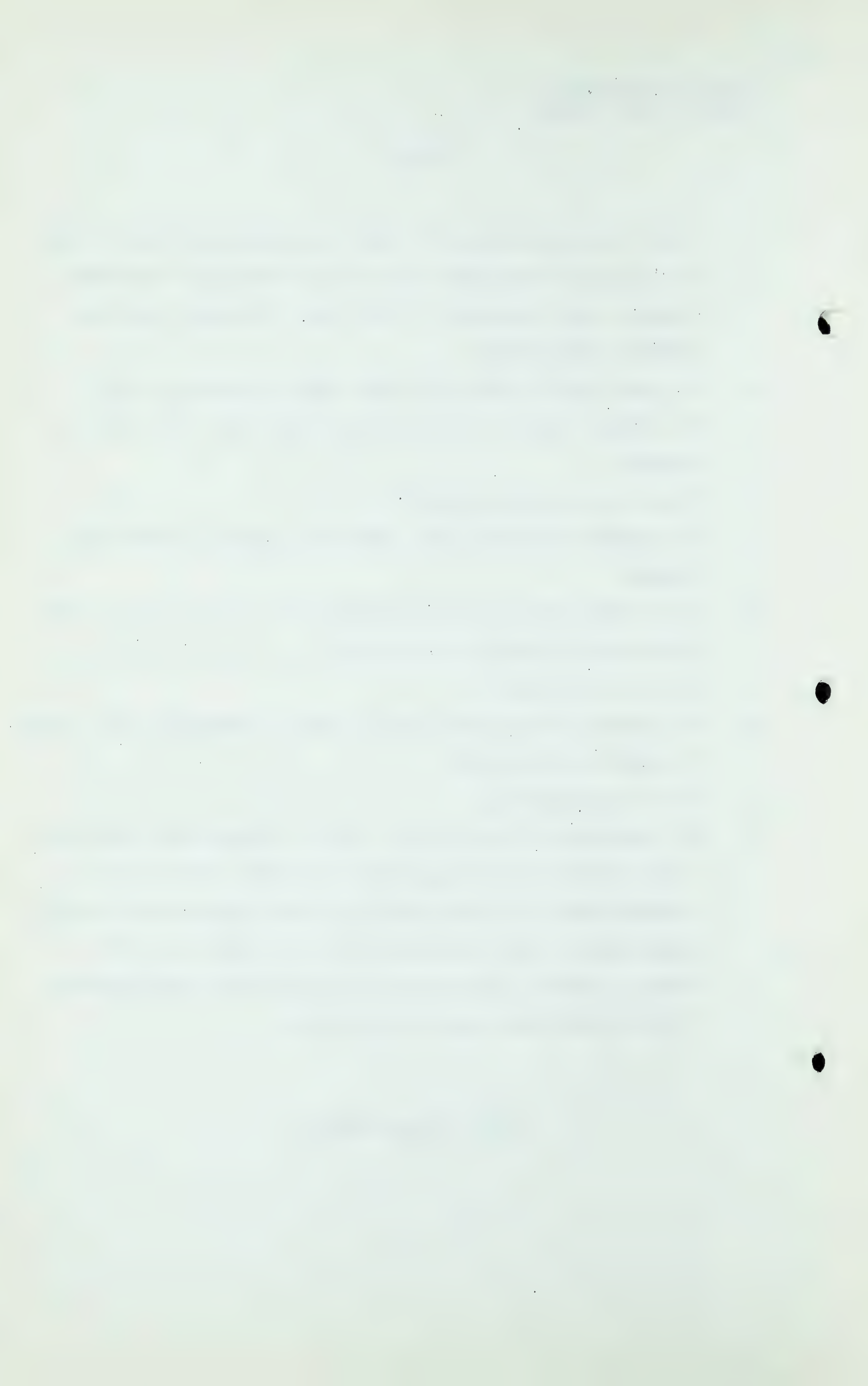
Q So far as you know there are no other communities that would be added to that list?

A Not to my knowledge.

Q Mr. McConnell, I believe you told Mr. Macleod in connection with exhibit 109 and appendices I and II, that you had no further details on the peak day or the annual take from the three fields, did I understand you correctly on that?

A That is right. I did not on the annual but the estimates that are made are done on a peak day.

(Go to page 3081.)



Earl J. McConnell,
Exam. by Dr. Govier.

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Q You just have the peak day figures then for the first and the fifth years?

A Yes, sir.

DR. GOVIER: Mr. Martland, is it your intention to support any further detail on the distribution of peak and annual requirements between the fields and how they would be then dealt into meeting the Province's requirements?

MR. MARTLAND: Well, there has been submitted Exhibit 34 of Mr. Hawthorn's. Now, certainly, if the Board wishes additional material beyond that, it will be prepared. I had not proposed to do it.

DR. GOVIER: I do not have a copy of that. Do those figures coincide with the figures given by Mr. Hawthorn?

MR. MARTLAND: Yes. Have you got the schedule there?

THE WITNESS: Yes, sir.

Q DR. GOVIER: Perhaps, Mr. McConnell, you can tell me what Mr. Hawthorn's exhibit says for Pincher Creek in the fifth year as to peak day withdrawal?

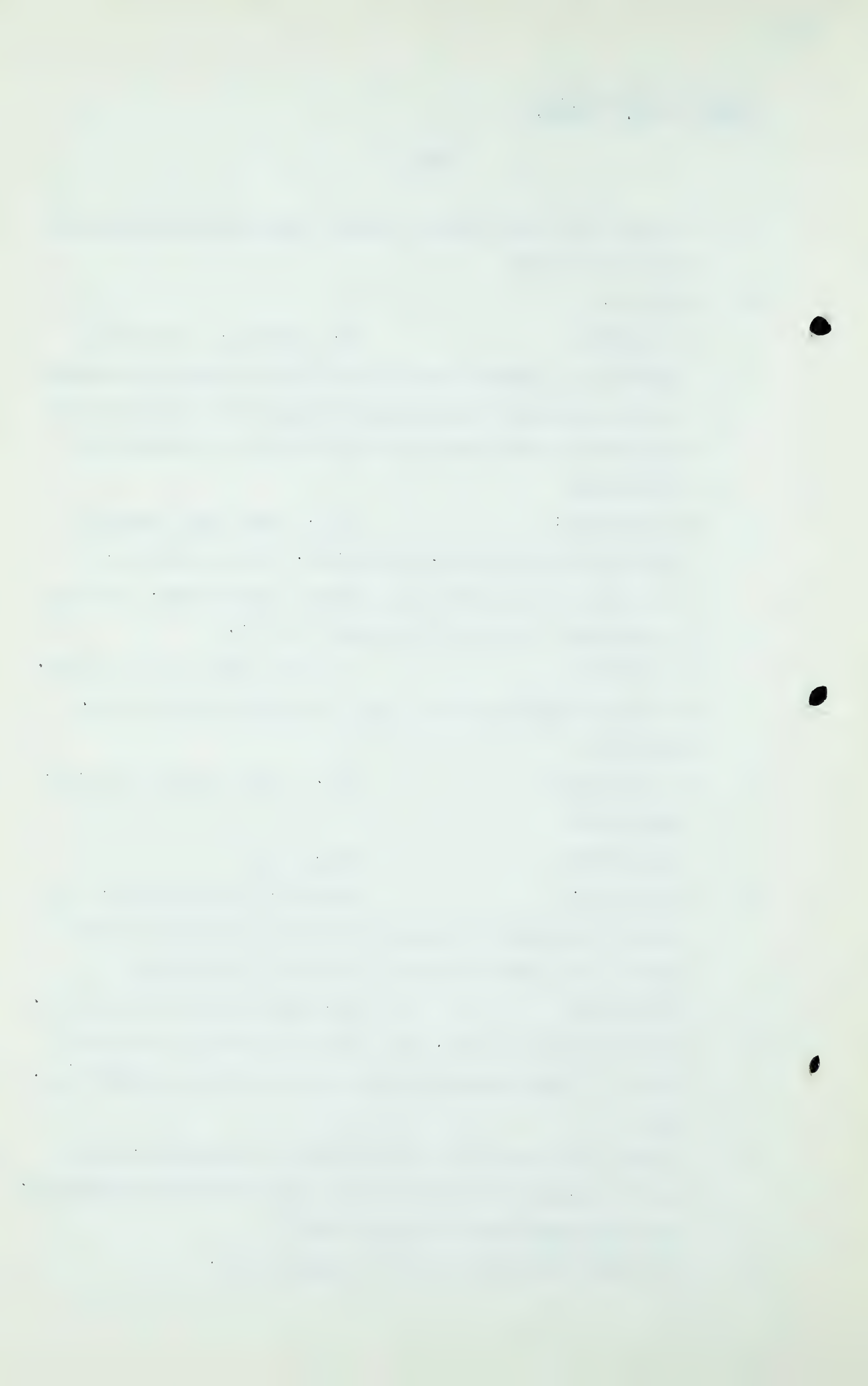
A THE WITNESS: Mr. Hawthorn has 125 million.

Q And your figure is 175, and I take it that that would be subject to some revision if you served Alberta communities, would it?

A I think the population of the Alberta communities, those I gave you, are only about six or seven thousand population.

Q The change would not be significant?

A The change would not affect it appreciably.



Earl J. McConnell,
Exam. by Dr. Govier.

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Q But there is a difference between this figure and Mr. Hawthorn's?

A That is right, sir.

DR. GOVIER: I think, Mr. Martland, there should be some reconciliation in those figures if you would make them available.

MR. MARTLAND: The difference between the 125 and the 175, as to that, was based upon the exhibit filed by Gulf itself as to deliverability from the Pincher Creek field.

DR. GOVIER: So that Mr. Hawthorn's figures for Pincher Creek would all be increased in the proportion suggested by Gulf?

MR. MARTLAND: That is correct, sir.

DR. GOVIER: What about the other fields, Pakowki?

MR. MARTLAND: I will have the witness go over that in detail.

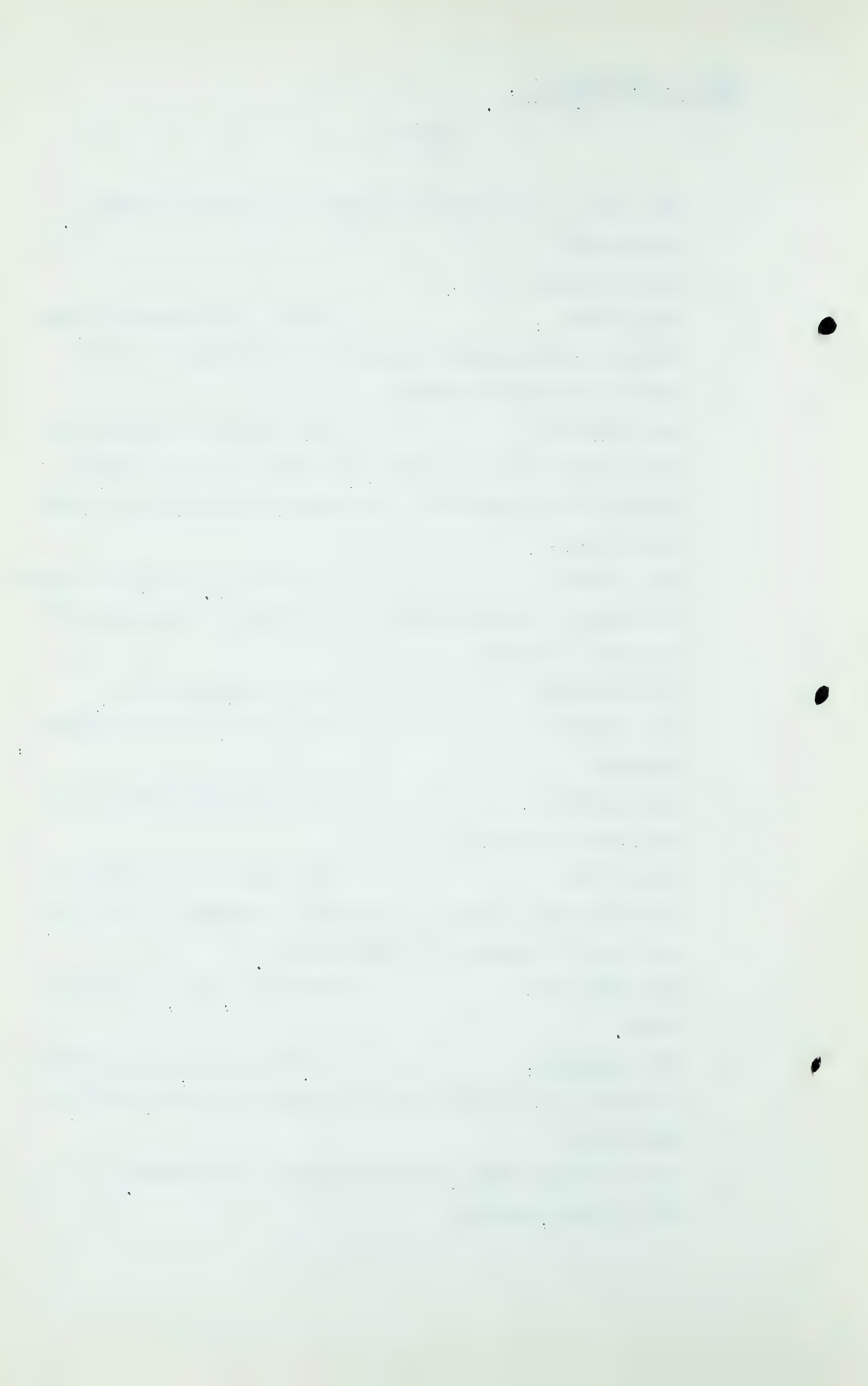
DR. GOVIER: That might be advisable and you can perhaps cover it entirely by comment if there is no need for changing the computation.

MR. MARTLAND: Very well, sir, we will do that.

Q THE CHAIRMAN: Mr. McConnell, was provision is there for retiring the bond indebtedness each year, on what basis?

A It is 20-year bonds, full retirement in 20 years.

Q That is all, thanks.



Earl J. McConnell,
Re-Ex. by Mr. Martland.
J. T. Innis,
Dir. Ex. by Mr. Martland.

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- Q MR. MARTLAND: I just have one more question, Mr. McConnell, and it relates to a question asked by my learned friend, Mr. Nolan, regarding the $10\frac{3}{4}$ cents per 1,000 field price. At what pressure base did you make your computations with respect to price and so on?
- A That is 14.7 pressure base.
- Q And were you aware that the pressure base in the Gulf contract was 15.025 pounds?
- A Yes, sir, I think so.
- Q What difference would that make with regard to price, that is, the initial price of $10\frac{3}{4}$ cents?
- A That would be roughly 11 cents at 15.025.
- Q So that your price would be a higher price to the producer, would it, comparatively it is a higher price?
- A Yes, sir.

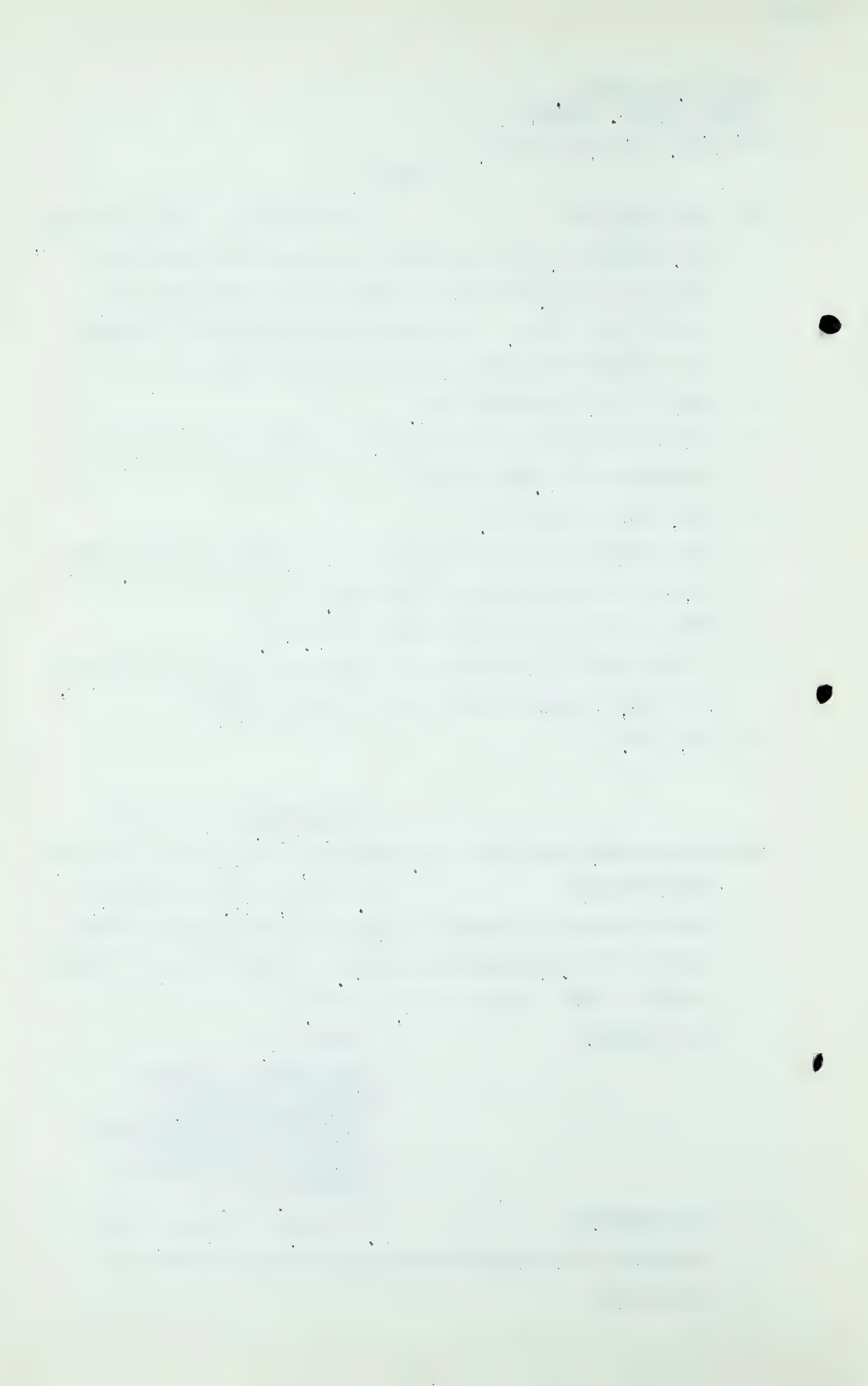
J. T. INNIS, having been first duly sworn, examined by Mr. Martland, testified as follows:

MR. MARTLAND: Mr. Innis, sir, is presenting the exhibit "Proposed Natural Gas Transmission System South of the U.S.-Canadian Border". I would like to tender a copy of that as an exhibit, please.

THE CHAIRMAN: Exhibit 113.

SUBMISSION OF NORTHERN
NATURAL GAS COMPANY,
"PROPOSED NATURAL GAS
TRANSMISSION SYSTEM SOUTH
OF THE U.S.-CANADIAN
BORDER PUT IN AND MARKED
EXHIBIT No. 113.

- Q MR. MARTLAND: Mr. Innis, you are a vice-president of Northern Natural Gas Company in charge of operations?



J. T. Innis,
Dir. Ex. by Mr. Martland.

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A I am.

Q And would you outline briefly to the Board your educational and professional qualifications?

A I am not a graduate of a college. I attended college for three years, leaving that institution after three years.

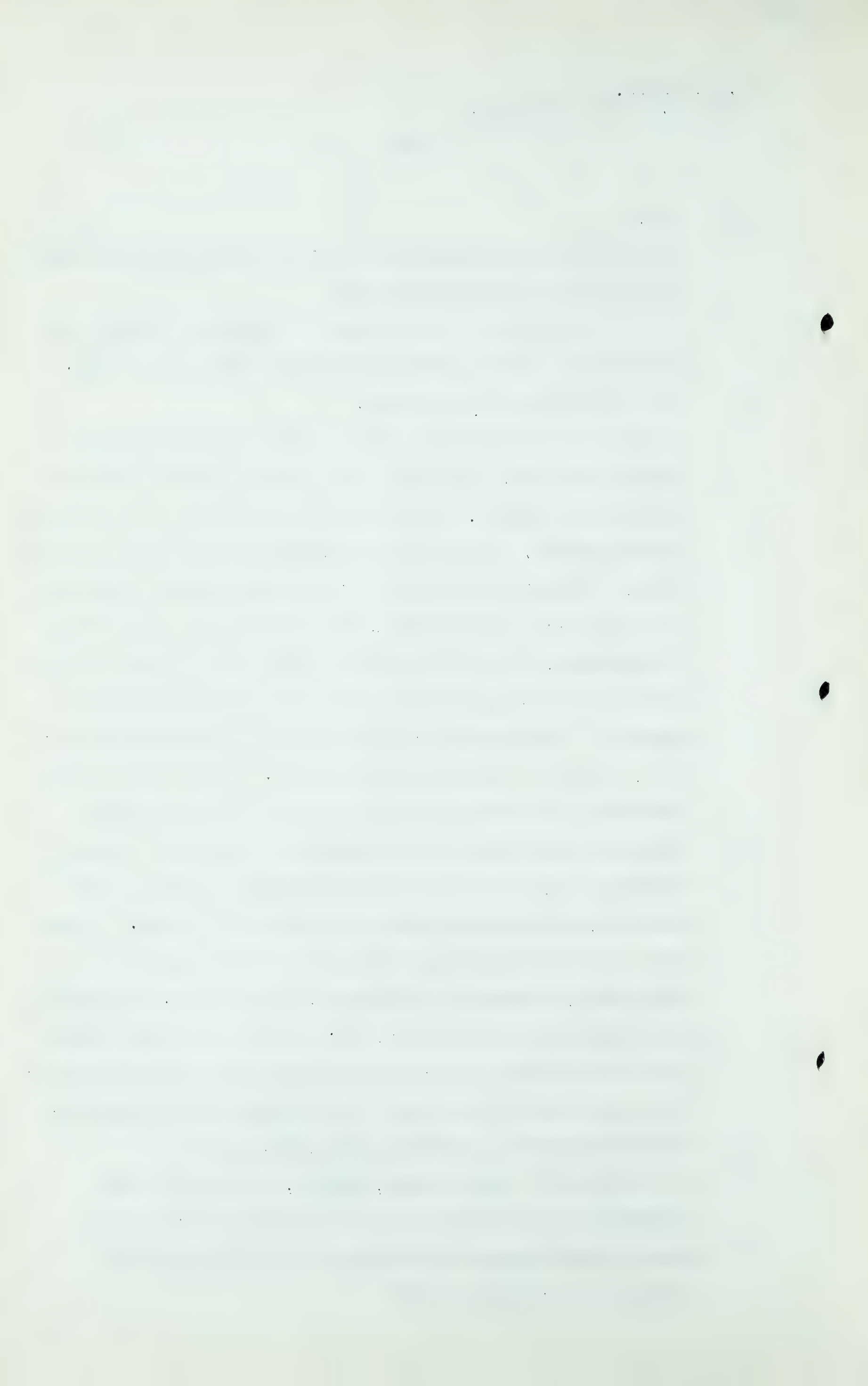
Q Carry on with your experience.

A In 1928 I first started in the natural gas business at Guyman, Oklahoma. In 1930 I went to what is now Northern Natural Gas Company, starting as a draftsman in the engineering department. Later I was surveyor in charge of surveying crews. I was then brought in from the field and worked in the engineering department as an estimator on engineering construction. Later I assisted in the design and construction of pipelines, compressor stations and distribution systems. I have served as inspector on pipeline construction, compressor station construction. I have been superintendent of construction where we did it with company forces on both pipeline and compressor stations. I have served as Assistant to the Superintendent of Compressor Stations, also as Assistant to the Chief Engineer. I was for a while General Superintendent over the pipeline department, compressor department, measurement, engineering and dispatching departments. My present title and duties are Vice President in charge of Operations over the departments mentioned before when I was General Superintendent.

Q And that involves generally, what, Mr. Innis?

A It involves the engineering, design, construction and operation and maintenance of all our system facilities.

Q And did you supervise the design of the line which is shown in this Exhibit 113?



J. T. Innis,
Dir. Ex. by Mr. Martland.

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A I did.

Q Now, that consists of a map, a chart and certain schedules there. Would you just outline to the Board briefly any comments which you wish to make to supplement the text.

A The first sheet in Exhibit 113 is a small geographical map showing the approximate proposed location of a pipeline proposed to be built by Northern Natural Gas Company connecting with the Western Pipe Lines project near Emerson on the International Border and extending into and down through the State of Minnesota to connect with our present system at Minneapolis and St. Paul, Minnesota.

The second sheet, print, is a schematic diagram of what we call our transmission system, referring to the delivery point between the Western Pipe Lines and Northern Natural Gas Company at the International Border, at which point we propose to instal a compressor station on the United States side and another one, or station No. 2, approximately 160 miles south of station No. 1, and then on into the Minneapolis and St. Paul area. This project, of course, is designed for delivery of 150,000 Mcf. per day capacity and would consist of 400 miles of 24-inch pipeline. No. 1 compressor station is 6400 horsepower, No. 2, 4800 horsepower.

Sheet 3 is a summary of transmission data showing the suction discharge compression ratios and the volumes per day, also showing the fuel requirements for the two stations. Then it is followed by the horsepower showing the calculated horsepower and the rated proposed horsepower that we would instal, and, of course, the length of the line.

J. T. Innis,
Dir. Ex. by Mr. Martland.

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The next sheet is statement of the tonnage required for 400 miles of 24-inch O.D. pipeline.

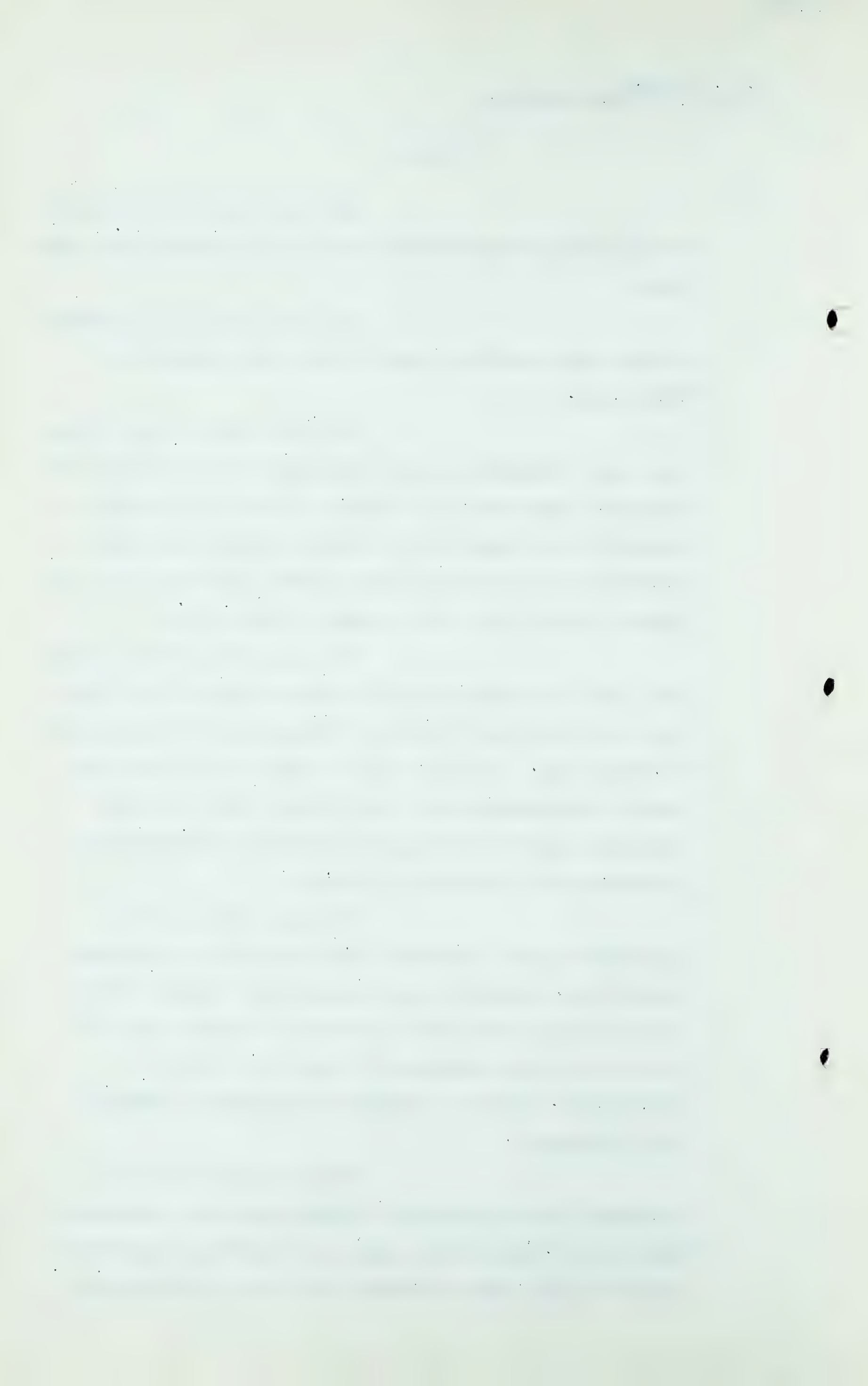
The next sheet is a summary of our estimated plant costs in the total amount of \$24,880,000.

The next sheet covers estimated cost of operation and maintenance facilities for this pipeline, consisting, of course, of the cost of cathodic protection and micro-wave telephone system, and headquarters for our division and district operating and maintenance crews in the total amount of \$622,000.

The next sheet is our estimated cost of constructing 400 miles of 24-inch O.D. pipeline from the border south of Winnipeg to the Minneapolis-St. Paul area. I believe that is more or less detailed except on the next sheet I will state that the total estimated cost of this pipeline would be \$20,368,000 or an average cost per mile of \$50,920.

The next sheet is the estimated cost to construct 6,400 horsepower compressor station No. 1 south of the International Border, and if you will notice that it is in what we normally refer to as detailed cost totalling for the No. 1 station \$2,150,000. This cost averages approximately \$335.00 per horsepower.

The next sheet is the estimated cost to construct a 4800 horsepower compressor station No. 2 and is the same as the previous compressor station except that its total cost would be \$1,740,000,



J. T. Innis,
Dir. Ex. by Mr. Martland.
Cr. Ex. by Mr. Nolan.

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or an average cost per horsepower of \$362.00 per horsepower.

MR. C.E. SMITH: Mr. Martland, in your sheet 6 do you want to make a correction on your slide-rule there?

THE WITNESS: That is a typographical error. That should be \$1,000 a mile.

MR. MARTLAND: Just answer any questions, Mr. Innis.

CROSS-EXAMINATION BY MR. NOLAN:

Q I have one thing, Mr. Chairman. Mr. Innis, in your Exhibit 113 on the first page you have a little sketch map on which you show the location of the proposed line both in Canada and in the United States, and I observe, or perhaps I might ask you, when was this map made, some time ago?

A The date of the map is October 10th, 1951.

Q Oh, yes, October 10th, 1951. The reason I asked you, Mr. Innis, is because you have there a little hatched portion showing what I take to be the Williston Basin area?

A It is, sir.

Q Now, I have seen maps showing the Williston Basin area which indicate that it extends up into the southwest corner of Manitoba and into the Province of Saskatchewan. Have you seen maps that showed it extending there?

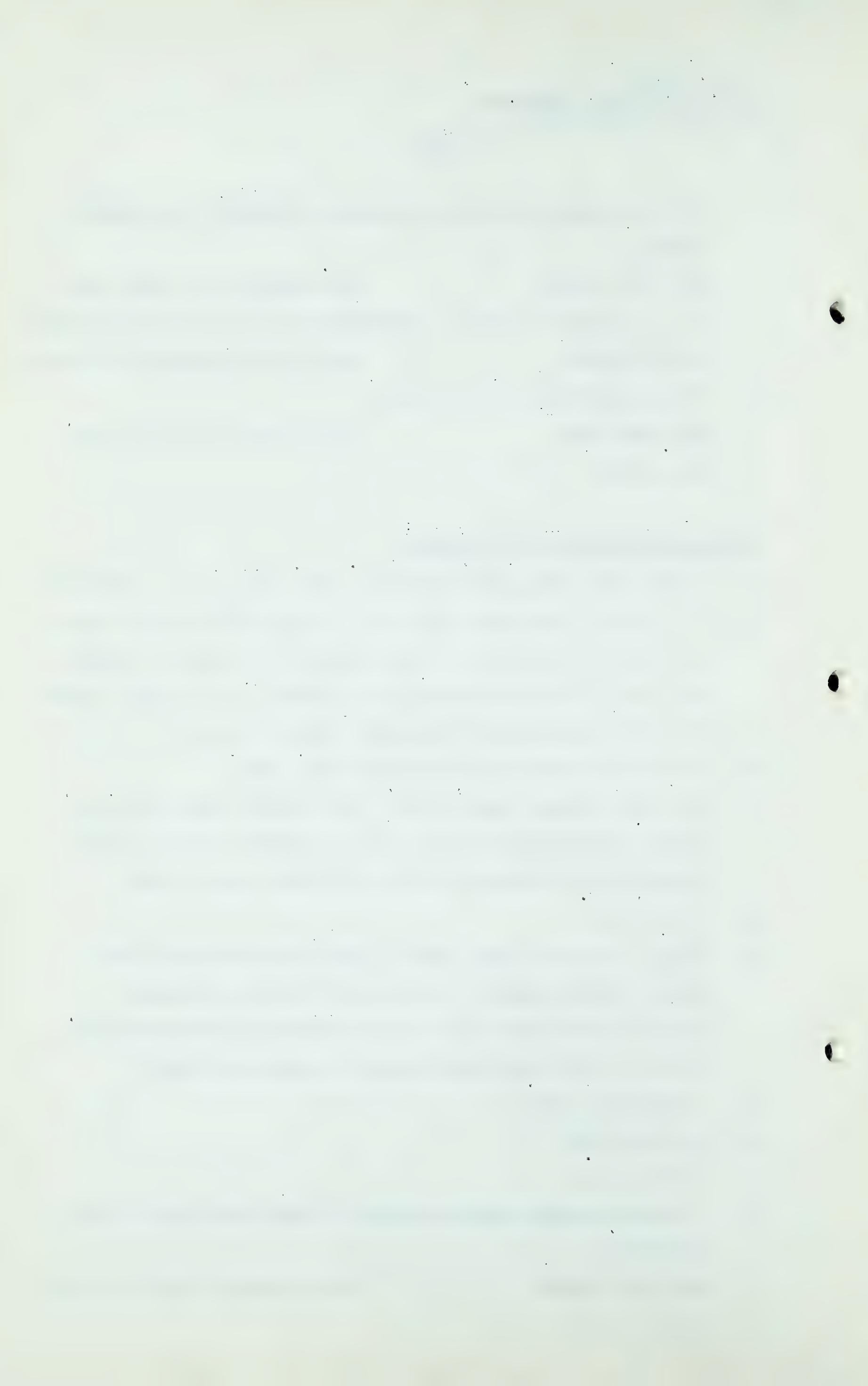
A I have not, sir.

Q You have not?

A I have not.

Q I do not suppose we can discuss it very profitably if you have not.

MR. C.E. SMITH: You can draw a line up there, if you like.



J. T. Innis,
Cr. Ex. by Mr. Milvain,
Exam. by Mr. C.E. Smith.

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CROSS-EXAMINATION BY MR. MILVAIN:

Q Just one question occurs to my mind, Mr. Innis. Certainly I am not enough of an engineer to understand this, but I notice on the second page of your exhibit you appear to have 6400 horsepower at Emerson which pushes your gas 160 miles to your second station, and there you have 4800 horsepower that pushes it another 240 miles down to Minneapolis. Why is it you have more horsepower for 160 miles than 240?

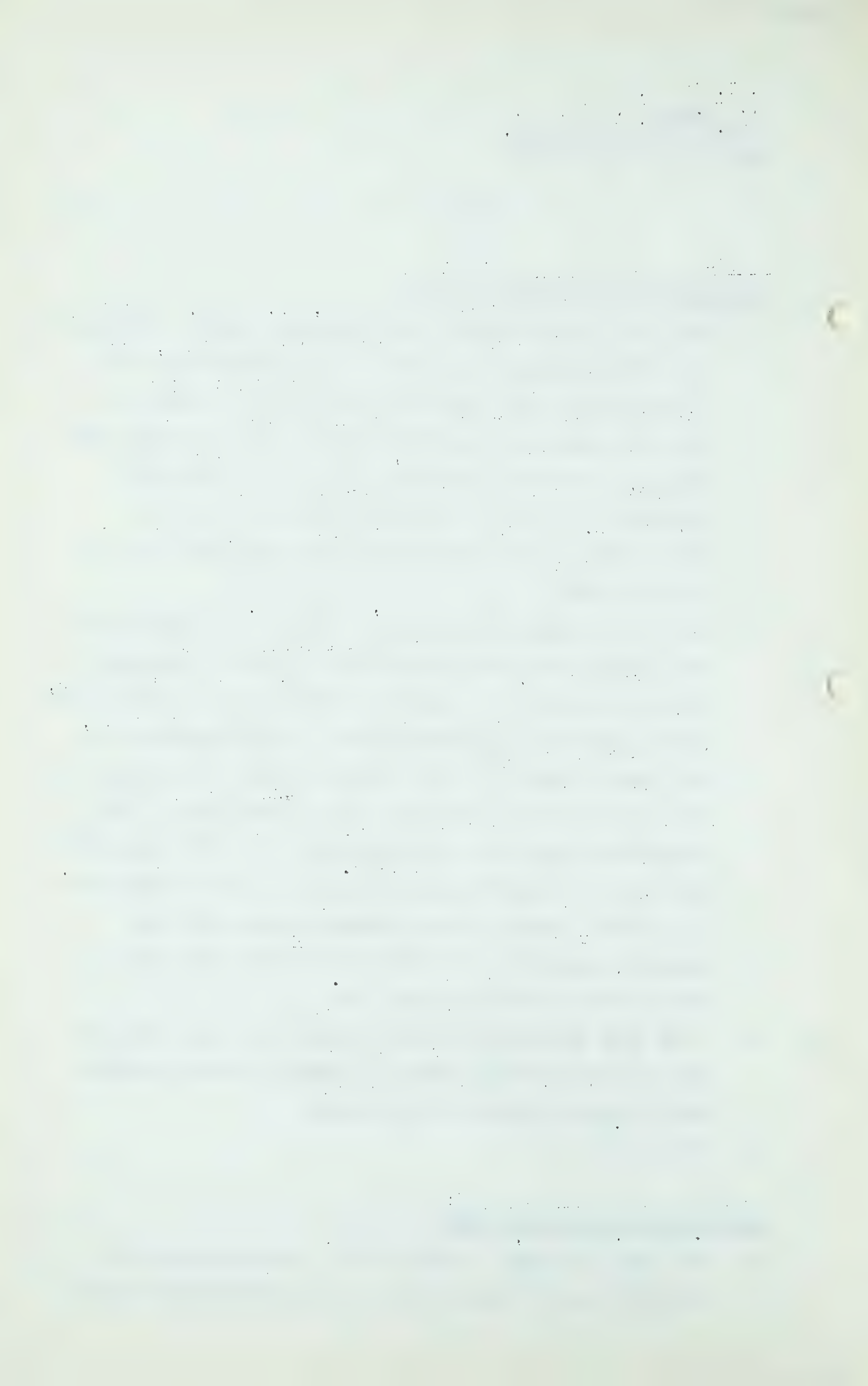
A That can be explained this way, I believe. We propose to take the gas from the International Border at somewhere around 350 pounds. We propose to compress it to 653 pounds, which gives you a compression ratio of approximately 1.8, and then we carry that for 160 miles where the pressure on the suction of the next plant will be 433 pounds. That compressor station in turn compresses it to 706 pounds and delivers it to the Minneapolis-St. Paul area at 385 pounds. It is just a matter of the compression ratio and the pressure required at the point at which we instal the station and at the end of the line.

Q I was just wondering whether it might have been that you had in mind attaching service laterals in that area that would require pressure to feed them?

A We do not.

EXAMINATION BY MR. C.E. SMITH:

Q Mr. Innis, at page, I think it is 7, estimated cost of constructing 400 miles of 24-inch line from border south



J. T. Innis,
Exam. by Mr. C.E. Smith.

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to Minneapolis, have you got it?

A Yes.

Q Just one question. Your unit price, second from the right?

A Yes.

Q Is that F.O.B. mill?

A That is our estimated cost of the pipe F.O.B. the mill.

Q I did not hear the last part of it.

A F.O.B. the mill.

(Go to page 3090)



J.T.Innis,
Exam. by Dr.Govier

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THE CHAIRMAN: Mr. Smith, do you wish to ask Mr. Innis any questions?

MR. S. B. SMITH: No, I have no questions, sir.

.....

EXAMINATION BY DR. GOVIER:

Q Mr. Innis, would you refer to Sheet 1 please?

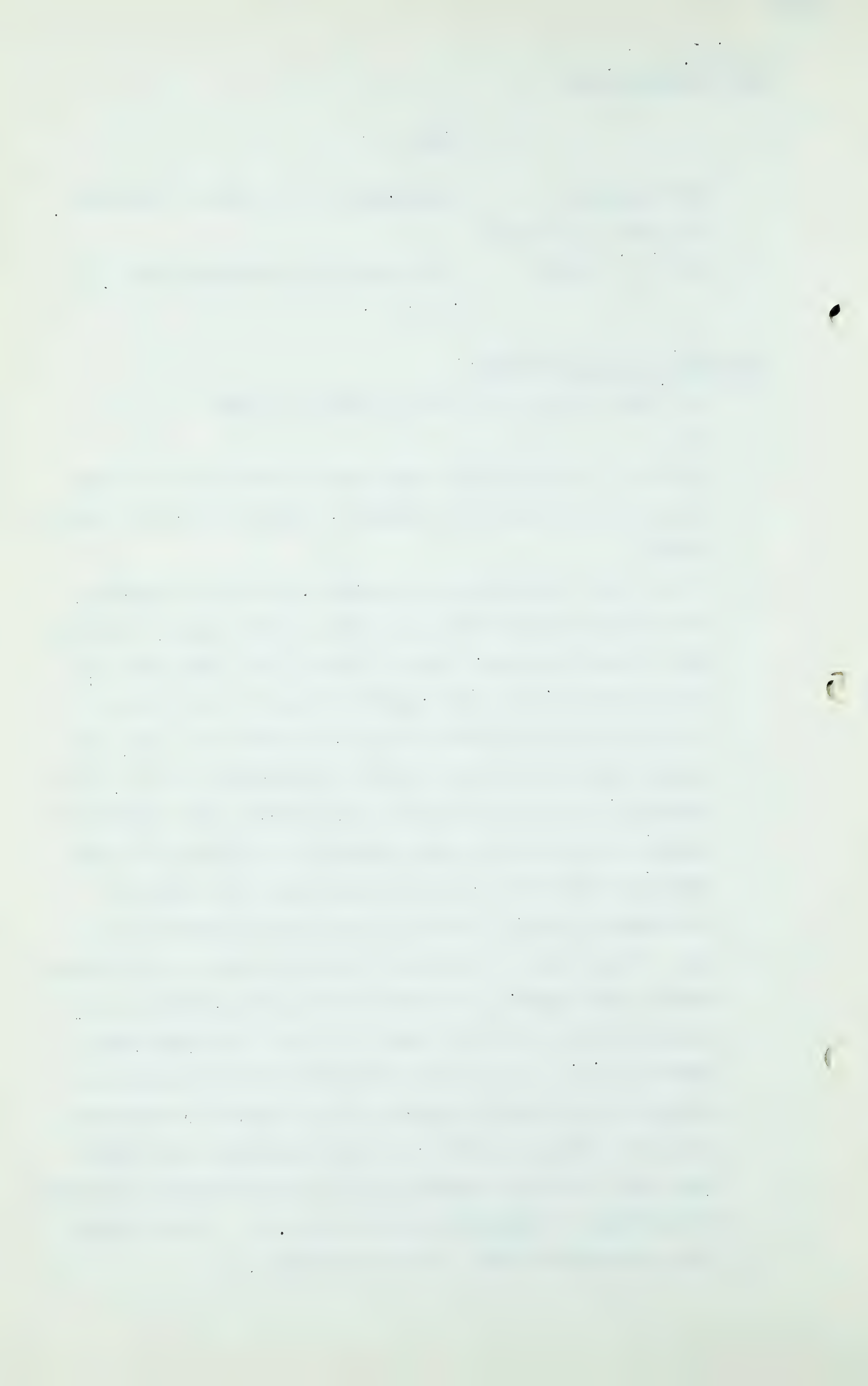
A Yes.

Q Could you tell me whether the route of your line has been selected with respect to terrain, is that why it is a curved route?

A It has been selected due to terrain. If you are familiar with the Red River Valley, you will notice that we followed down it quite a ways, then we turn off and swing into the Minneapolis-St. Paul area, and by doing that we missed a lot of the lake area and the bogs, and what have you, the rough terrain immediately north of Minneapolis and St. Paul.

Q Thank you. And now on Sheet 3 you indicate the compression ratios. I notice that these ratios are considerably higher than those submitted by other applicants with regard to the Canadian lines. I wonder if you would comment on it?

A Yes. It has been our practice for some years in our Northern Natural Gas Company, to operate within those ranges on compression ratios. We find that it is not a disadvantage to operate at 1.8. If we have to staff a station such as we propose in this North country, it is a question of where to put in the 1100s or 1400s. We have proposed to use 1600s vertically, vertical engines, which we know, and are operating horizontally at compression ratios up to 2. We also think that the verticals will be able to handle it.



J. T. Innis,
Exam. by Dr. Govier

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Q Is that consistent with the small amount of standby provision at Station 2, Mr. Innis?

A Well, yes. Station 2, if you will notice, we have been, I consider, conservative in our design, and if you will notice the spacing, 160 miles and 240 miles, and if at some later date, after the line is built, additional volume would be made available, we have our spacing such that it would fit in with an increase in that capacity in a very ready economical manner.

Q And is that part of the reason for using the higher initial ratio?

A Yes, sir.

Q I assume that you could have deliveries at Minneapolis and St. Paul at a lower pressure than 385 too, so that, I suppose, gives you some standby, does it?

A It does. We were operating at one o'clock today where we had about 360 pounds at the north end of our system, and we operate sometimes down to 240, so that will give you some idea how we operate.

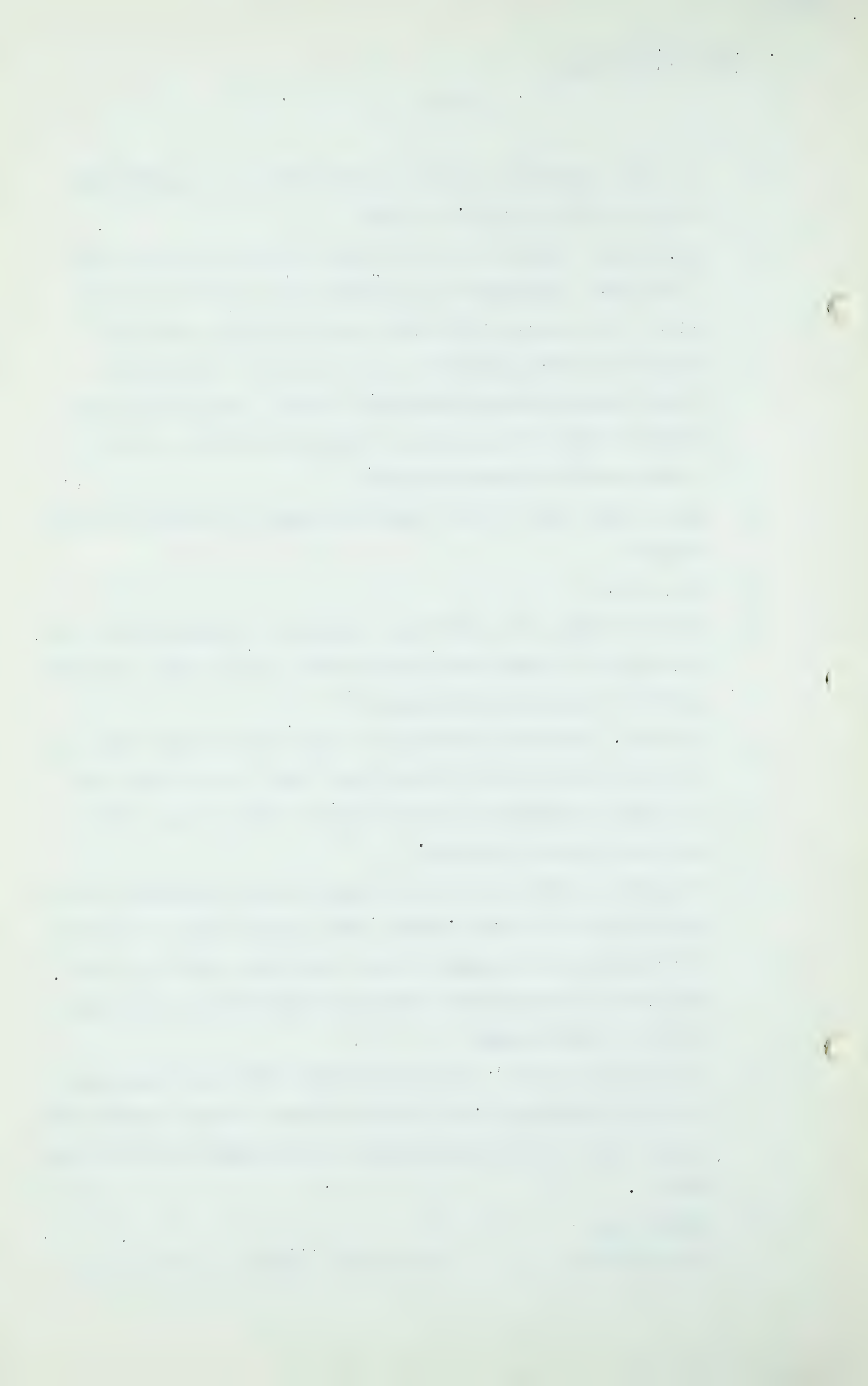
Q You gave us unit costs with regard to the horsepower for the two stations, too, Mr. Innis, and I assume that it would be correct for us to compare those costs with others we have had, provided we make the necessary compensation for duty, sales tax and freight?

A I think you could. I am not familiar with the other cost detailed estimates, but I think we have got ours pretty well written out so that you can pick out any part of it that you want.

Q Thank you.

THE CHAIRMAN:

That is all, thank you, Mr. Innis.



M. J. Deutch,
Dir. Ex. by Mr. Martland

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MR. MARTLAND: I will call Mr. Deutch, Mr. Chairman, who will present this exhibit, which is entitled "Presentation With Respect to Defence Load Characteristics of Areas Served by Northern Natural Gas Company in the United States." I tender that, sir.

THE CHAIRMAN: That will be Exhibit 114.

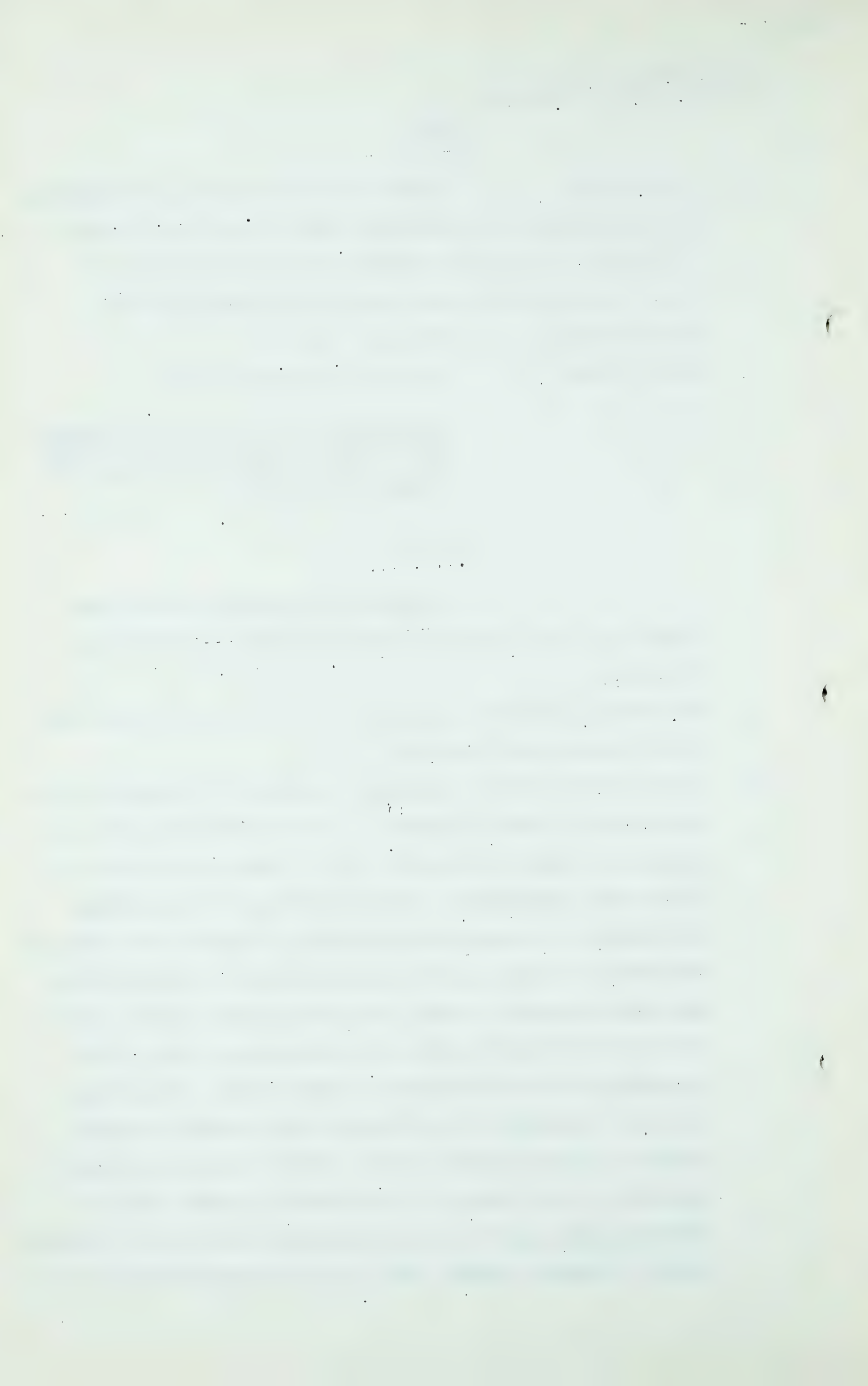
PRESENTATION WITH RESPECT TO DEFENCE
LOAD CHARACTERISTICS OF AREAS SERVED
BY NORTHERN NATURAL GAS IN THE U.S.
MARKED EXHIBIT 114.

.....

MICHAEL JOSEPH DEUTCH, having been first duly sworn, examined by Mr. Martland, testified as follows:-

Q Mr. Deutch, would you please give the Board your educational qualifications and training?

A I am a mechanical and electrical engineer. I studied at the University of Ghent, Belgium. I had a five-year course in mechanical engineering, and I took an additional course in electrical engineering. After entering the engineering profession, I did post-graduate work in Brussels and Ghent on economics. I began my professional work as an engineer with the Sofina Company, a public utility holding company, that had its head office in Brussels, Belgium, and one of the subsidiaries was the Canadian General Finance Company in Toronto. I worked for two years in the design of hydro-electric systems and gas plants, and then became the rate engineer of the Company, the engineering sponsor for the operating light, power and gas companies owned by the Canadian General Finance Company, that is, the Mexican Light & Power,



M. J. Deutch,
Dir.Ex. by Mr. Martland

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Mexico Tramways, Brazilian Gas, Brazilian Traction, The Gas Company in Brazil, and the Gas Company in Argentina, which was later sold by the Canadian General Finance Company. I was also responsible for the period of four years as manager in charge of development of the properties, and represented the Company and the subsidiary companies in three countries, the Paris Gas, Lisbon Gas Company of Lisbon, the Mexican Light & Power Company, the Barcelona Traction & Light, and various other companies in Belgium and France, owned by the Company.

I had no experience with mobilization of defence features until 1938, when it was my privilege in a private capacity, and somewhat out of channels, to assist the British War Office and the Central Electricity Board with current analyses of load characteristics in the Berlin Munitions industries and other places behind the line. I came to the United States in 1940 via Dunkerque and entered the service of the United States Government, where I served first as a principal consultant on the engineering staff of Warfare Analysis, and later became Chief of the Integration Scheduling Branch of the War Production Board. In this capacity I was responsible for representing the Chairman's view to the Facilities Review Committee and the Plant Site Board, which was a Defence Board that was in charge of analyzing the various energy transportation and other characteristics of proposed war plant sites.

I later became Special Assistant to the Chairman of the War Production Board in charge of aviation gasoline, and other so-called urgent war programs, and ended

M . J. Deutch,
Dir. Ex. by Mr. Martland

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up my Government service as Special Assistant to the Director of War Mobilization and Reconversion. I had also the privilege to serve as an executive officer of The Canadian, United Kingdom and the United States sombined Public Utilities Committee which was a joint Committee set up to study the energy program in the occupied territory.

At the present time, and since 1946, I am a consulting engineer in Washington, D. C., and I also serve as a consultant to the Chief of Staff of the United States Army in charge of logistics, but nothing in this presentation should be construed as being an offical statement of policy of the Chief of Staff, or Assistant Chief of Staff, G-4, or any other agency in which I hold an official capacity outside of my engineering practice, or in which I may hold such a capacity tomorrow after returning from here and being sworn in.

This presentation is made to put before you data on the defence load characteristics of the area served by the Northern Natural Gas Company, which are pertinent to the Board's decision on the application of Western Pipe Lines to remove natural gas from the Western Provinces to certain North Western States of the U.S.A.

I would like to state that this presentation has been prepared by me and no statistics have been used from either of the applicants without being personally correlated, as far as the run of statistical monthly sheets are concerned, and none has been used in this presentation which has not been censored or reviewed, except for two typographical mistakes, by Western Pipe Lines or Northern

M. J. Deutch,
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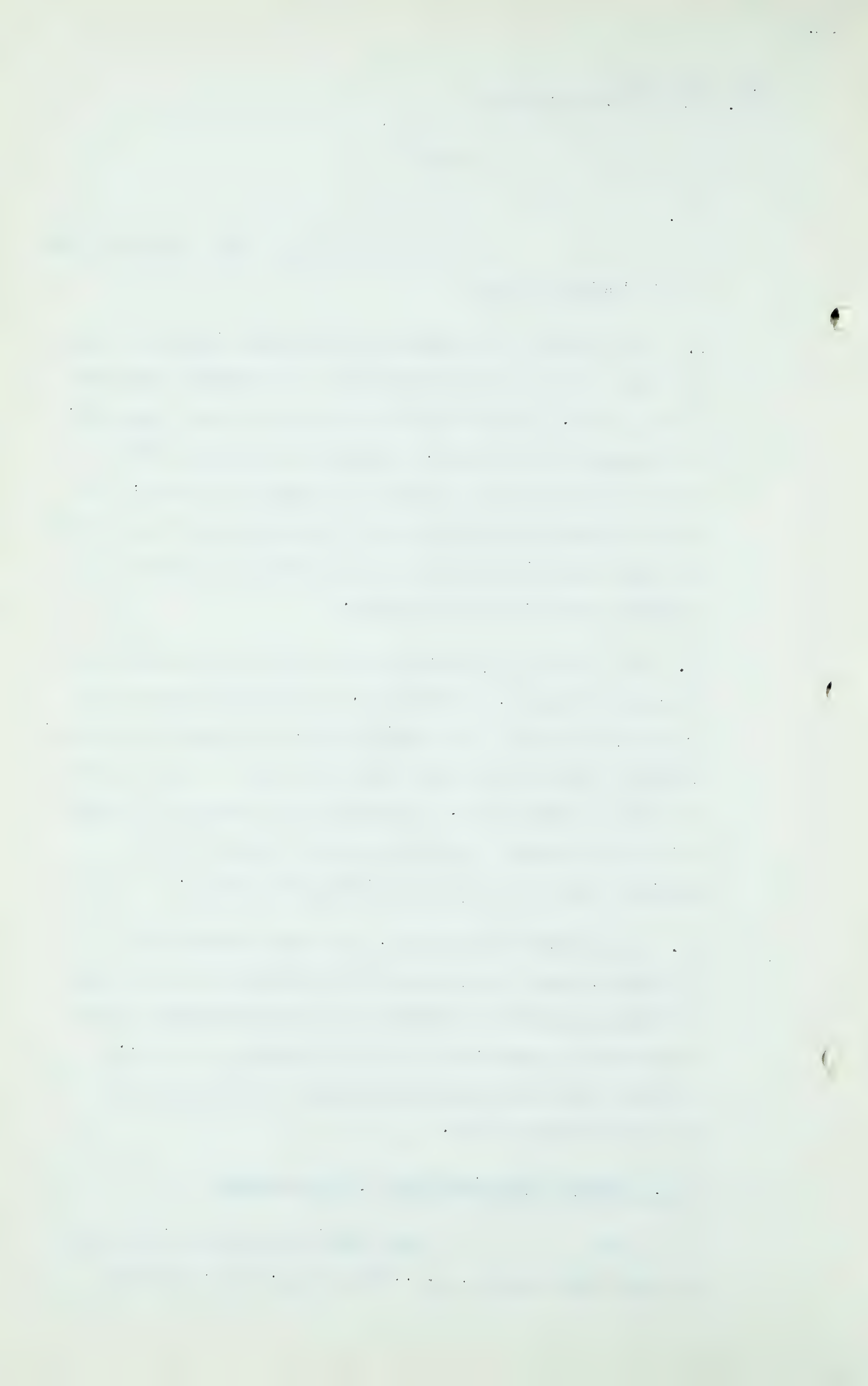
Gas.

We shall develop our testimony along the following lines:

1. The Company is serving a growing area which in case of war would be called to play an increasingly important defence role. Security considerations of plant dispersal, an optimum labour market, necessity to develop further both new and marginal mining and mineral resources, and other factors evidence that the area served by the Company has increasing importance in the defence program to a flexible and integrated program.
2. The economic characteristics of the area served by Northern indicate, in addition, a permanent industrial growth that is not competitive with, but generally complementary, advantageous and related to that of Alberta and Southern Saskatchewan. A flexible and integrated program of gas development would be of great benefit to the Prairie Provinces and the Northwestern States.
3. A detailed load survey, now being conducted by Northern, shows the portion of natural gas used directly or indirectly by its customers in the production of war materials or services to be of the magnitude of 21.5 billion cubic feet, and susceptible of reaching soon 35 billion cubic feet.

II. GENERAL CHARACTERISTICS OF THE SYSTEM

(a) The territory served by Northern Natural Gas Company, i.e., Minnesota, Iowa, Nebraska,



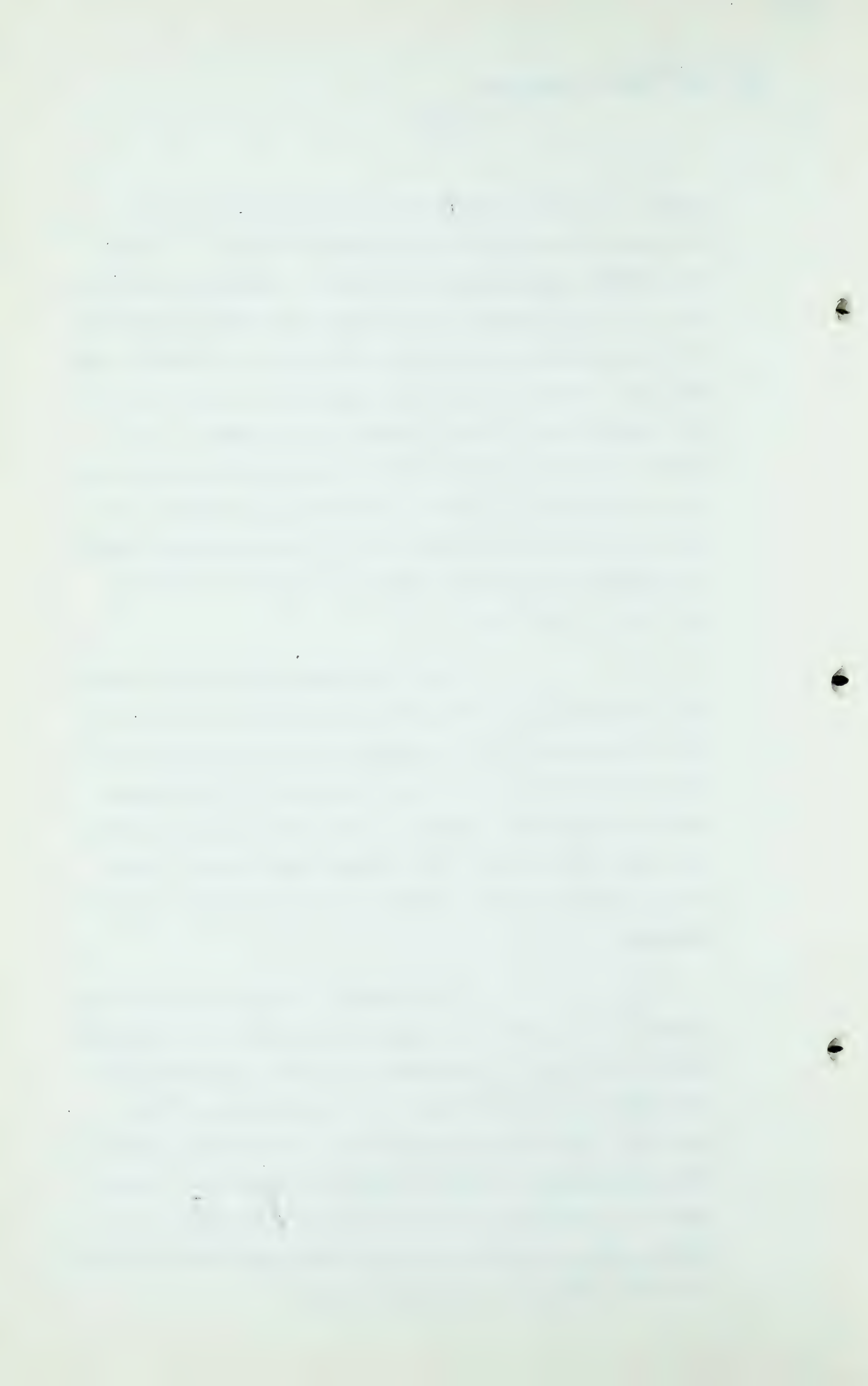
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Kansas, and South Dakota, lies predominantly in the Northwest Central Area of the United States - a highly diversified agricultural area with an expanding industry. For the last 10 years the increase in relative importance of manufacturing has been at a much more accelerated rate than for the U.S. as a whole, and this is also the case for expenditures for new plants and equipment. The "value added by manufacturing" in this area increased by 300% in the last 10 years, compared to an increase of 226% for seven Mideastern States. The percentage increase in manufacturing workers was 78%, compared to 50% for the rest of the U.S.A.

(b) The total gas sales of the Company, which were around 75,000,000,000 cubic feet in 1943, are now at the annual rate of approximately 200,000,000,000 cubic feet. There is evidence that under a continuing defence program the demand on the Company's system will grow even more rapidly than during World War II, particularly from consumers directly affected by the defence program.

(c) This Company conducts a continuing survey of its markets by regions and uses, with particular emphasis directed to determine the portion of natural gas used directly or indirectly in the production of war materials and production essential to the defence effort. While this survey is now in progress, sufficient information is available at the time of this presentation to submit some of the basic findings developed as a result of extensive sampling of Northern load.



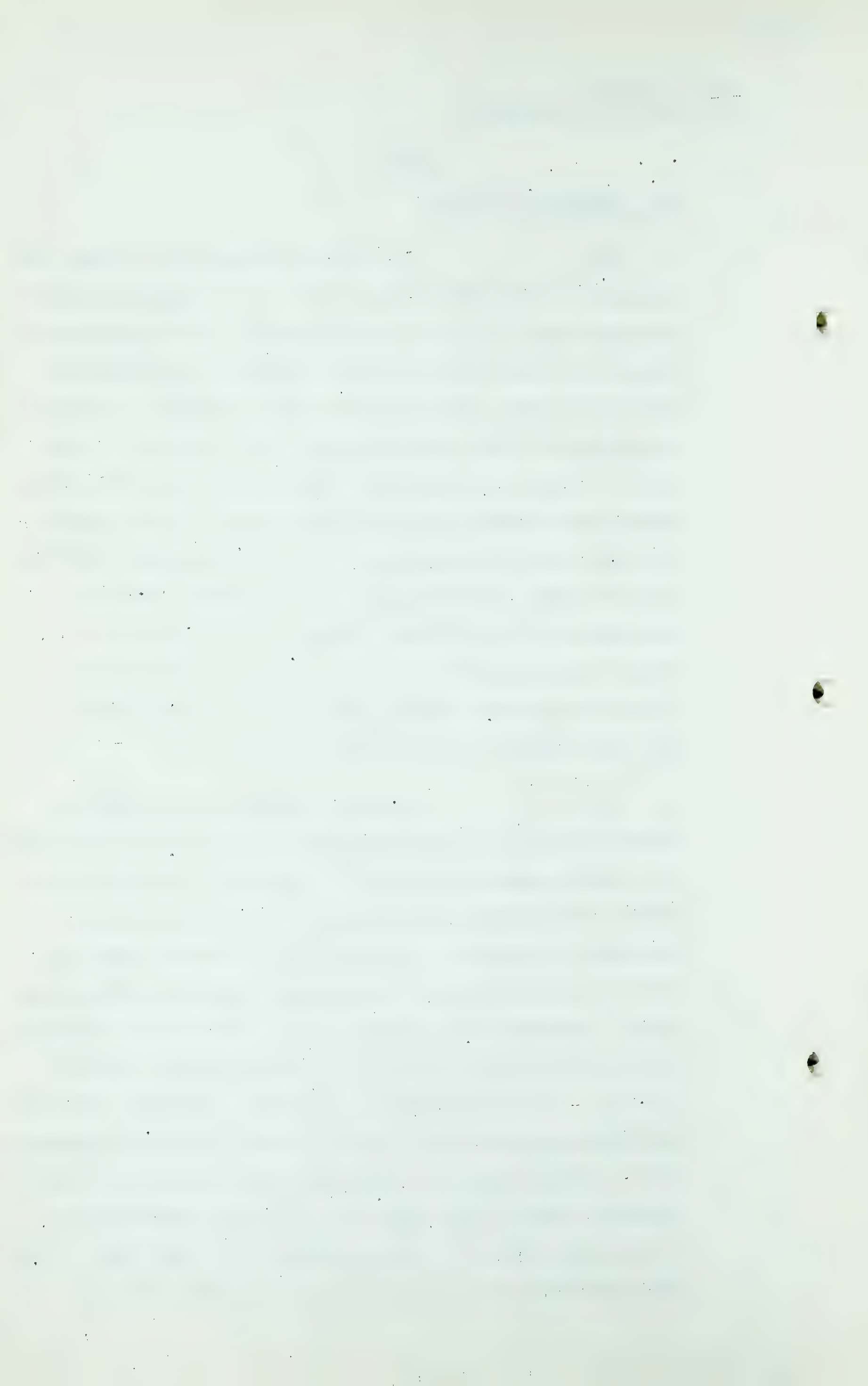
M. J. Deutch,
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III. WORLD WAR II LOAD

(a) The Northern Natural Gas Company has tabulated for the year 1943, a list of its large customers, together with the amount of gas consumed in the production of war materials and in services considered essential to the war program. This group of large industrial consumers represented in 1943 sales of about 42.0 billions of cubic feet, or 56% of the company's total sales, i.e., 75 billion cubic feet for the year (See tabulation I). As a group, they reported a consumption of 21.4 billion cubic feet for uses directly related to the defence program, which is equivalent to 28.6% of the company's total sales - a higher percentage than one would expect at first glance in an agricultural region, which was not in 1943 one of the main defence regions of the United States.

(b) As is well known, the geographic distribution of Command Construction and of the manufacturing facilities expansion program in World War II strove towards speed and maximum production, and had a very pronounced geographical pattern. Approximately 93% of the expanded facilities were placed in previously existing manufacturing areas. One-third was placed in ten of the Nation's largest industrial cities (all outside of the Northwest Central States). Ohio, Pennsylvania, Michigan, Illinois, New York, and Texas absorbed about 65% of the war facilities expansion. Out of the \$20 billion program the territory served by the Northern Natural Gas Company got only about \$900 million, or less than 5% of the total expansion, at that time. This same percentage also reflected, more or less, the war



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contracts awarded in the area. Nevertheless, as sub-contracting progressed and labour supply available in the area was more fully utilized, the company's customers increased their war load to attain the percentage of 56% mentioned above.

Tabulation I gives the breakdown of the very exhaustive analysis made in 1943 for the defence establishment and for the War Manpower Commission by the management of Northern, and it gives the various classes of consumers, the total sales to those groups, and the portions thereof which were used for the war program.

IV. DIFFERENT PATTERN IN THE PRESENT EMERGENCY

During the continuance of the present national emergency the geographical pattern of new facilities is and will be somewhat different for the following two reasons.

(1) Plant dispersion for national security is such an important factor that a pattern of location which would be strategically sound will have to be consistently followed. New plants and expansion of facilities will to a great extent attempt to by-pass highly concentrated industrial areas. The constantly increasing range of aircraft and other factors justify government and industrial leaders in locating more facilities in the Northwest Central Area.

There is growing evidence that not only new military establishments, such as the Strategic Air Command, now located in Omaha, but other vital war projects

M. J. Deutch,
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will continue to move into the area served by the company. While, for security reasons, it is not possible to give precise indications on this point, we can safely state that for the power plant load, as indeed for the general industrial load supplied by the company, the demands of Defence will be much higher.

(a) Labour Supply. As the Defence Program will expand, full utilization of labour will become essential to the balance of the war production program. The search for optimum labour markets has already become an increasingly important factor in plant location policy.

The U. S. Department of Labour classified labour markets into four groups (areas of labour shortage, areas of balanced labour supply, areas of moderate labour surplus, and areas of substantial labour surplus). With a few exceptions of critical defence areas, most of the territory served by Northern lies in the area of balanced labour supply, and, therefore, is likely to be selected for expansion of defence facilities. Manpower is not as critical in the area served by Northern as it is in the Pacific Northwest or in the Middle West, and the territory served by the company is from this point of view particularly well suited for an increasingly important defence role.

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A V. RESULTS OF 1951 WAR LOAD SURVEY

(a) An additional study is now being conducted by Northern to determine the portion of natural gas used directly or indirectly at the present time by its customers in the production of war or other defence materials. In this study the total demand of the industrial customers for the year 1951 has been estimated and coefficients of defence loads have been applied to these estimated demand figures. These coefficients have been indicated by the customers themselves on the basis of individual figures in a sampling covering some 40 industrial consumers, and 18 electric power plant loads. (See tabulation II)

(b) With respect to electric power plant consumption of gas supplied at the present time by Northern the following remarks seem pertinent:

1. The percentage of generation traced to Defence production is around 12%. The Edison Electric Institute reveals that for all industrial electricity used in the United States (sales by public utilities plus generation by industrial plants), the total monthly war use was in October 1951 approximately 2,000,000,000 kilowatt hours, i.e., only 2.1% of a national total of 19,000,000,000. During World War II, i.e. from June 1941 to December 1943, the growth of the war uses in electricity during this period of 30 months was from 2 to 10-1/2 billion, i.e., 450% increase in 30 months, or a monthly increment of 15% of the base load.

2. If we would consider the 24 months period from Pearl Harbor through December 1943, we would arrive at a slightly higher rate of increase.

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(c) If we assume that the increment of industrial uses of fuel in the area in the present emergency will follow the nation-wide pattern of World War II (although fuel economics and the competitive position of gas in the area served by Northern now adds stimulus to the demand for natural gas rather than for other fuels) it can be shown that the industrial defence load alone might increase the requirements another 35,000,000,000 cubic feet.

On the basis of the sampling of large consumers of the company selected on a list covering one-third of the company's gas sales, we already may observe, from tabulation II, a war load for 1951 of 21.6 billion cubic feet, or roughly 17% of the areas of consumption under survey. In this connection I want to point out that some army and navy establishments that were given a separate heading in the 1943 survey have been classed here as "Federal institutions" for reasons of accounting and security.

The Northwest Central Area of the United States constitutes in the present Defence program an area of growing importance. It might well play, in case of hostilities, a role similar to that played in World War II by the Southwest States, inasmuch as the area served by this Company includes many potential industrial locations that are likely to be called upon in case of war.

Q MR. MARTLAND: There was just one general question I wished to ask you, Mr. Deutch. With regard to the subject of taconite that was mentioned yesterday. I think it was Mr. McGrath who indicated some concern that the development of the taconite ore might create competition for the

J. Deutch,
Dir. Ex. by Mr. Martland.

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development of iron in Canada. Can you help us with regard to that subject?

A Well, Mr. Chairman, and Gentlemen of the Board, I would not dare pose as an expert on metallurgy in a Province where I have been active in petroleum and natural gas for some time and where many of counsel at the table know too well of my background, but I will say this, we have in the Mesabi Range but enough ore to fight one more war, if we are lucky. This explains why many people in Washington, and I tried to be one of them purely as a private citizen, did all they could to develop, for instance, Steep Rock mining development, which is financed by the Export Import Bank and the Labrador Development and many others which at this stage have not as yet been made public. The reserves of taconite in Minnesota are in a completely different category to mineral reserves. They are highly marginal and if I might draw a parallel it is like comparing volcanic sulphur which has a degree of purity of 37 to 42% and natural sulphur, where we have some traces in the Chisholm area, where you have a degree of purity of 92%. It is more in ersatz than in iron ore. If the defence preparedness will continue, and I am one of those who, purely as a private citizen, are not too optimistic on the international outlook, and we will need in this war effort to develop taconite and that will create a real headache for suppliers of fuel in those States. But to presume that taconite might be competitive with Labrador or with Steep Rock or with other reserves of minerals in the Prairie Provinces and other Provinces of the United States, in my opinion is not borne out by the engineering facts.

J. Deutch,
Dir. Ex. by Mr. Martland.
Cr. Ex. by Mr. Nolan.

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Q Thank you, Mr. Deutch. Answer any questions that are put to you by my learned friends.

CROSS-EXAMINATION BY MR. NOLAN:

Q If I understand it, at the present moment you are employed in an independent capacity as a Consultant?

A At the present time I happen to be Consulting Engineer in Washington, D.C. and I do part time serving the United States Government.

Q You have come before this Board to present certain data on the defence load characteristics of the area served by Northern Natural Gas Company?

A Yes, sir, as a private Consulting Engineer who has introduced their load figures and made certain projections and to continue to analyze them.

Q Would it be fair to say you are conversant with the defence requirements of North America?

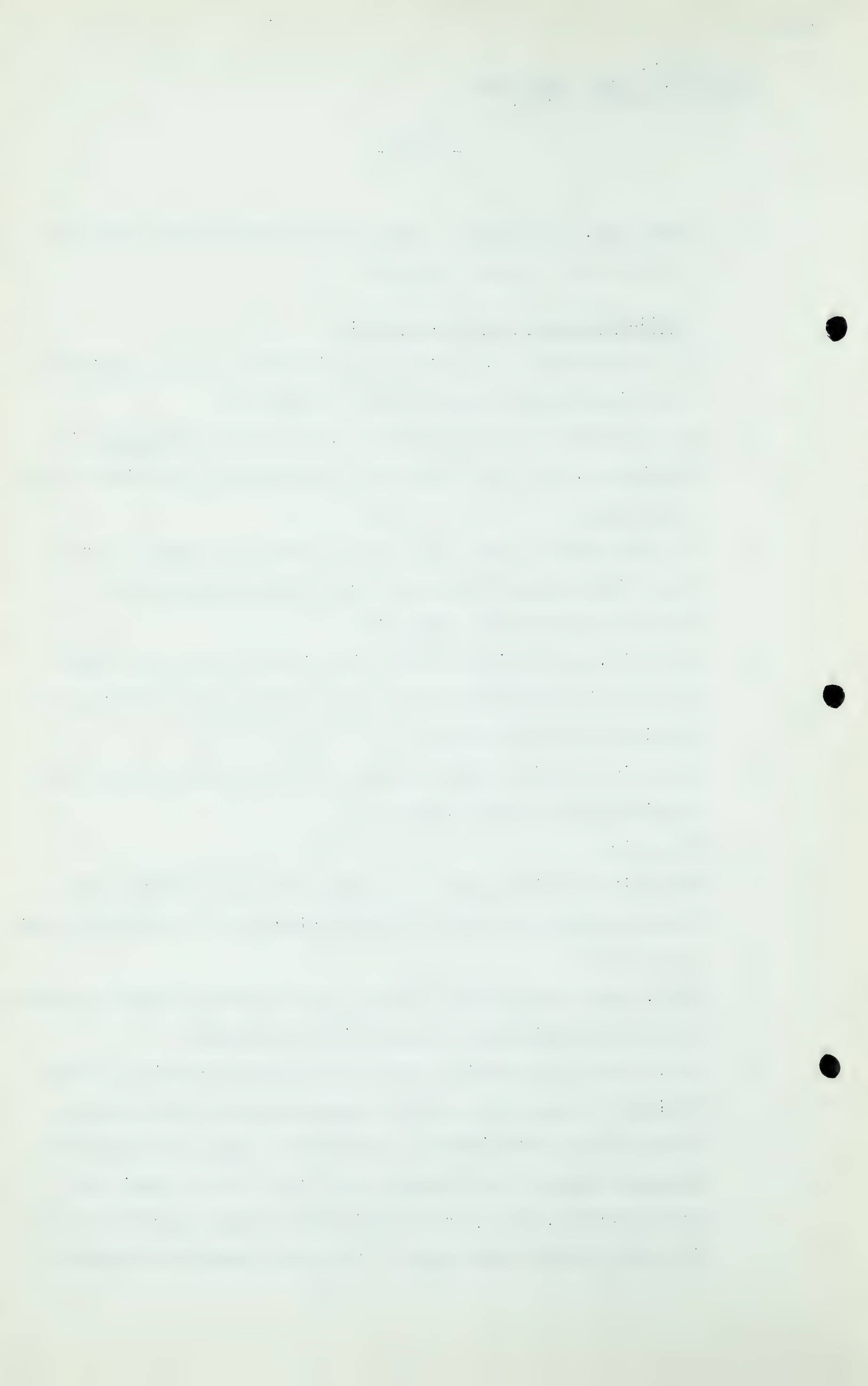
A Yes, sir.

Q Would it be fair to say you appreciate the cardinal need of certain materials out of existing plants at the present time?

A Yes, sir.

Q Well, then, perhaps you can tell me something about the defence load characteristics of the Pacific Northwest?

A Sir, I have not studied the defence characteristics of the Pacific Northwest but I have analyzed certain work sheets which I have established on the various areas served by the Northern Natural Gas Company and I left in the midst of those surveys, but I have sufficient factual conclusions to lay them before this Board. If you are asking me whether I



J. Deutch,
Cr. Ex. by Mr. Nolan.

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I am familiar with the fact that the Pacific Northwest has an important role in our defence war program and that there is a shortage of all sorts of fuels at the present time in Pacific Northwest, I will say yes, from reading technical literature and general knowledge of the problem I know that to be the case at the present time.

Q And why would you say that, Mr. Deutch?

A Because I am familiar with the fact that it is public knowledge that our aluminum industry, part of our raw magnesium industry, and some of our other plants have been located in the last war in the Pacific Northwest, and are still located in the Pacific Northwest.

Q Including our Atomic Energy Plant?

A I would refuse to answer any questions on that.

Q You need not be so hesitant because we have discussed it very fully here heretofore.

A I would ask the permission of the Chairman to be excused from answering that particular question.

THE CHAIRMAN: Well, we all know it is located in the Northwest, Mr. Deutch, so I do not think you need worry.

MR. C. E. SMITH: We do not know if we can get a freight car near it.

A I would respectfully submit to counsel that when you discuss a defence load you should not take a static view of such a load. The problem of logistics is a problem that is not tabulated at one specific time, and while today there is a definite shortage of energy in the Pacific Northwest it is quite possible that this area has already reached a certain degree of participation in the defence effort and should we

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enter a war, other areas of the country need only, on the grounds of dispersion, and it might be also on the grounds of the fact that there is a great shortage of manpower and of certain raw materials, and that you might have to go elsewhere for expansion, will be called upon to perform duties which will create a very great shortage and I personally have reasons to believe that the area of the Northern Natural might be in that case within ten or fifteen months.

Q But you have made no study of the Pacific Northwest from the defence load characteristic point of view?

A No, sir.

Q So you know very little or perhaps nothing of what the expansion might be in that area?

A I have not studied that area for this presentation, but I have given you a sufficiently clear conclusion.

Q Have you?

A Yes, sir.

Q Then tell me, have you heard about Trail?

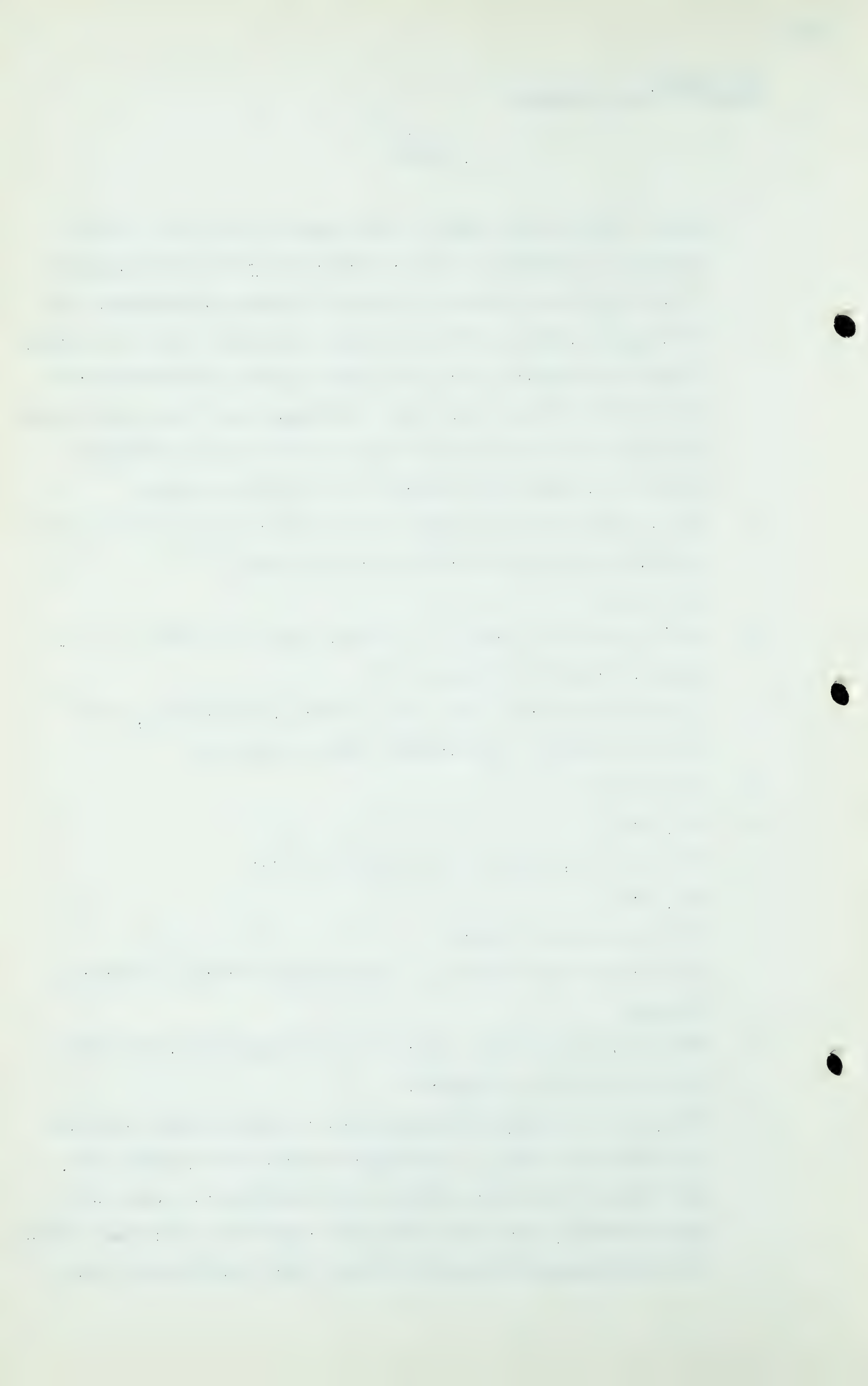
A Yes, sir.

Q What is there at Trail?

A There is the smelter of the Consolidated Mining & Smelting Company.

Q Would I be correct to say it is the largest miscellaneous metal smelter in the world?

A Well, if you add smelting capacity in the various ores that are treated at Trail, this might or might not be the case, but I know of several smelters where strategic ores are being treated, which are extremely important in the war effort. I am not prepared to testify before this Board on the load



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characteristics of Trail because I have not studied them.

Q I will not ask you any more about it, but as I understand it your feeling is that there is more possibility of development and growth in this Northern Gas area than there is in the Pacific Northwest. The potentialities are greater?

A If you wish and you have not used the word "defence" in your question, but if you talk of permanent natural industrial growth, as indicated by economic factors, I could give you one answer, but if you are asking specifically about the growth of the defence load I will tell you that should we enter on a preparedness program and that we would have to expand or build new sites, then most definitely there would be a power shortage. But in the Northern area, this area will be called upon to participate more fully and will feel a very acute shortage of power for war uses. That is what I am prepared to say.

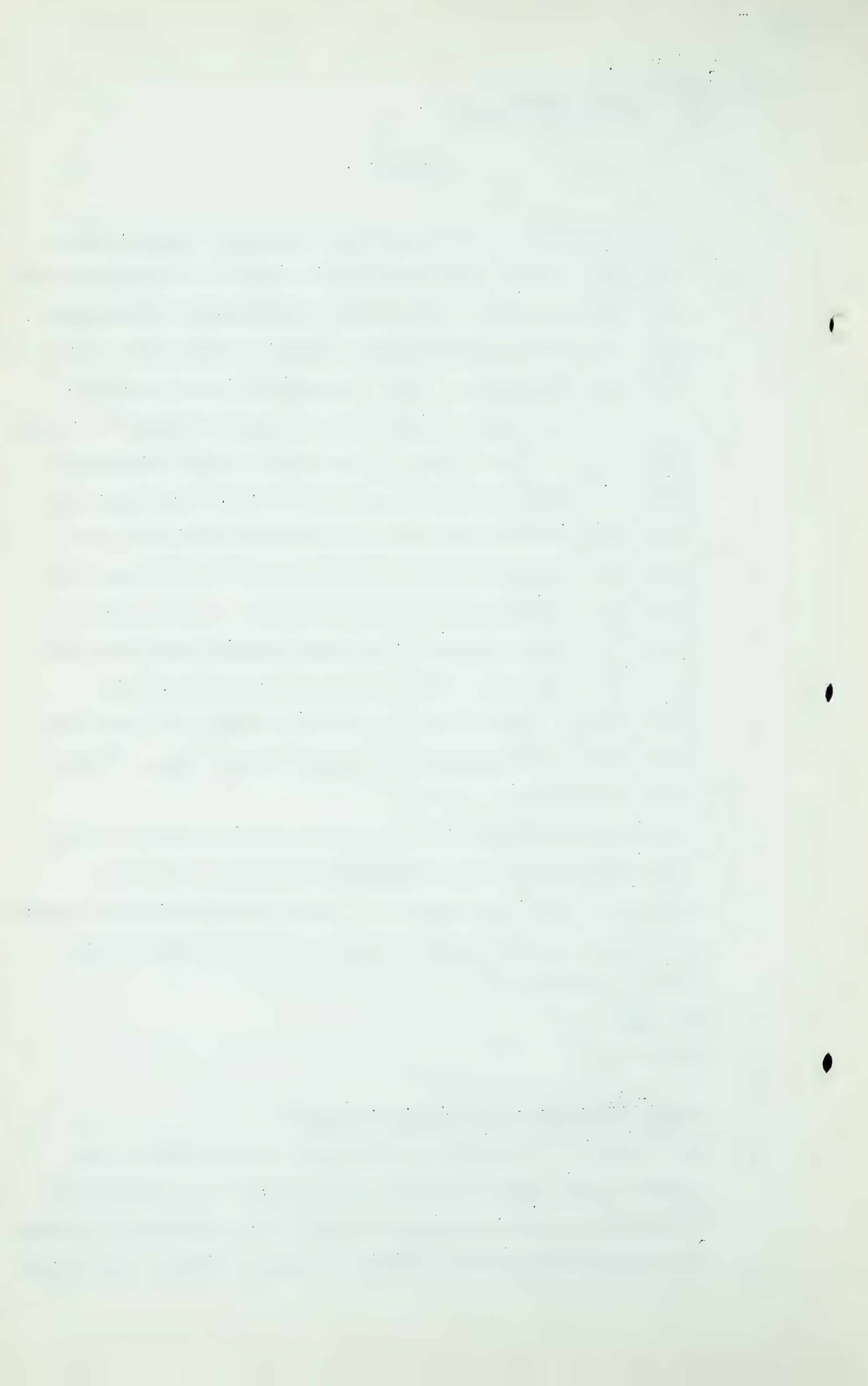
Q You would not suggest, Mr. Deutch, that in order to fulfil the requirements of this expanding area that you have described to me, you would not continue to provide all possible assistance by way of fuel for the existing plants in the Pacific Northwest?

A Of course not.

Q Thank you.

CROSS-EXAMINATION BY MR. S. B. SMITH:

Q Mr. Deutch, I am going to refer you to a statement in an exhibit which was filed here, not by me, but by some other interested parties, which was exhibit 59, presented on behalf of the British Columbia Electric Company Limited, the Seattle



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Gas Company, the Portland Gas & Coke, the Spokane Gas and Fuel, the Bellingham Gas Company, the Wenatchee Gas Company and the Washington Gas and Electric Company, all of which companies are in the business of distributing energy in the Pacific Northwest. Would you mind listening to this statement of theirs:

"Much of the industry in the Pacific Northwest . . ."
It is at page 4 on the top of the page.

"Much of the industry in the Pacific Northwest is concerned with the production of things which are necessary or essential to national defence. About half the present production of aluminum in the United States comes from reduction plants now in operation there. Other industries in the Pacific Northwest are devoted to the production of atomic energy, lead, zinc, copper, tin, calcium carbide, silicon carbide, ferro alloys, magnesium and lumber and to aeroplane manufacturing, shipping and ship building and repair. Among them are the great Boeing Aeroplane plant in Seattle, the Naval Base at Bremerton, where the largest naval vessels can be repaired and restored to service, the dry dock at Esquimalt and the huge mining and smelting operations at Trail and Kimberley. The last named is the largest producer of lead and zinc in the world and the largest industrial plant in Western Canada."

I think you would be in general agreement with that statement, wouldn't you?

A Yes, sir.

Q Now, there is in evidence here a letter dated September 16th, 1950, from the Honourable C. D. Howe, then Minister of Trade

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Cr. Dx. by Mr. S. B. Smith .

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and Commerce of Canada - you know who Mr. Howe is, of course, Mr. Deutch?

A Yes, sir.

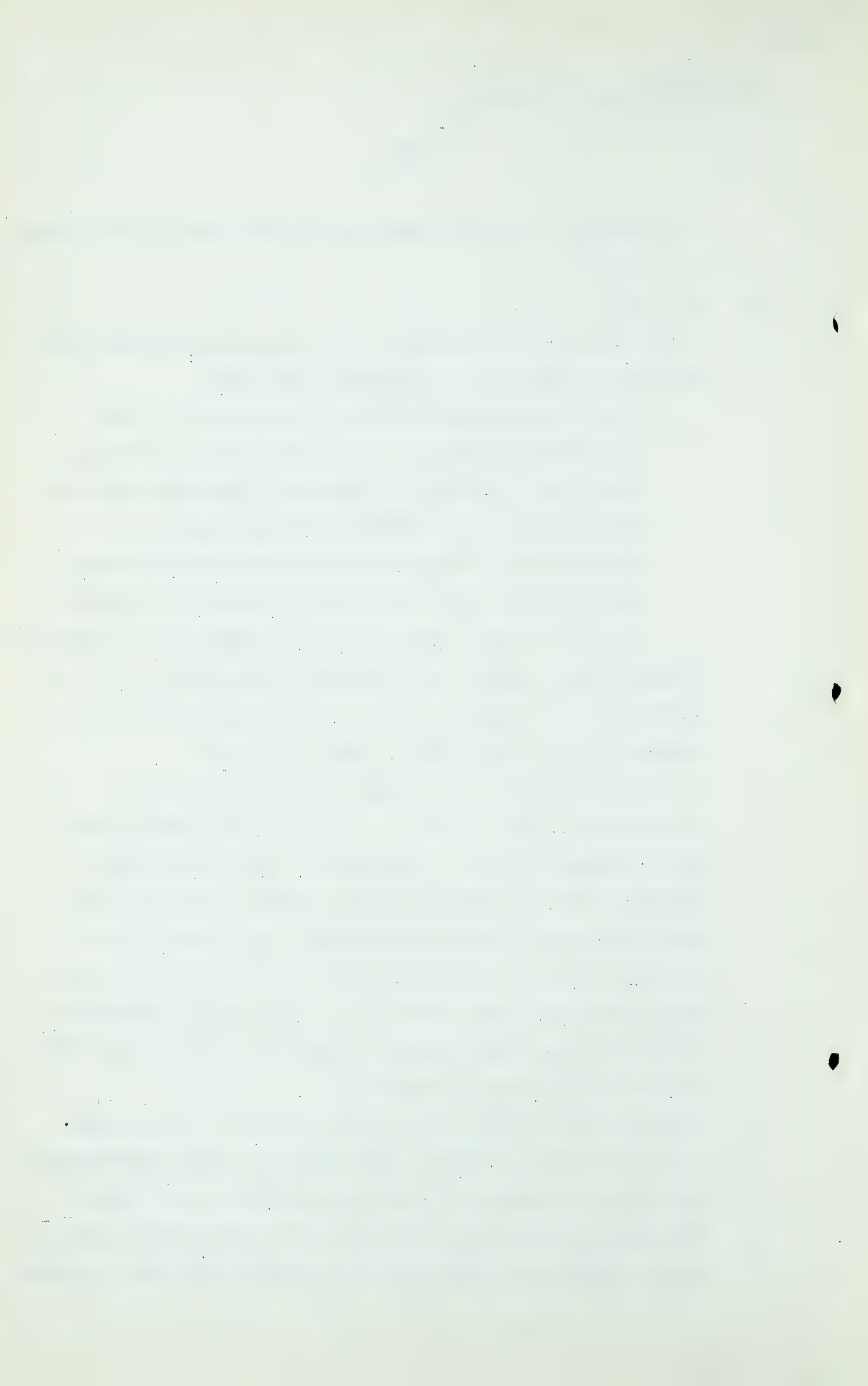
Q To Mr. Tanner, the Minister of the Department of Mines and Minerals at Edmonton, in which Mr. Howe says:

"I have recently been advised by the chief of the International Program of the United States Munitions Board that the Board is seriously concerned about the lack of fuel in the Pacific Northwest section of the United States, where the wartime industrial development, together with diversion of normal oil supplies to the Far East, has seriously accentuated the scarcity."

You would not quarrel with Mr. Howe's statement - or it is said to be a statement of the Chief of the International Program of the United States Munitions Board?

A I think I already -- may I interrupt you -- I think I already made clear to other counsel I do not quarrel with that statement at all. I only presented to the Board certain selected economic and load growth factors, which will take place in the next few years and I would even be as specific as to say between 1953 to 1957. In the case of an all-out war, this area will be called upon to perform a task in the war effort which is completely out of scale with what we have observed in 1943.

Q Yes, Mr. Deutch, there is also in evidence a letter filed by the companies to whom I have referred, those Northwestern distributing companies, written by Mr. Van Atten, Vice-Chairman of International Programs, Munitions Board, Department of Defence at Washington, dated May 11th, 1951, in which



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Mr. Van Atten said:

"Pacific Northwest, being short of electric power and having very limited fuel resources, obtains oil from California and coal from Utah, Montana and Wyoming. The oil is brought in from California largely by tanker, which might be cut off in time of emergency, and the coal involves long, mountainous rail hauling. Gas would relieve new space heating and domestic water heating loads from the electric systems and reduce the use of coal. Gas from Canada would also conserve the use of fuel oil which would then be available for more urgent uses. An assured supply of fuel seems essential for maximum safety, defence expansion and the future industrial growth of the Pacific Northwest."

You would not quarrel with that statement of Mr. Van Atten?

A Of course not. From my daily contact with gentlemen of the Munitions Board, I hold them in the highest possible regard. Then again relating to the requirements of the Pacific Northwest, that has not been challenged in my testimony but it does not, to my best belief, contradict any of the statistical facts I respectfully laid before the Board, not as an advocate but as an expert.

Q I wonder if you could tell us how gas and oil are transported to the area in which Northern Natural distributes its natural gas? By pipe line, I take it.

A Are transported or will be transported?

Q How they are now transported?

A They are transported in time of emergency, they are trans-

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ported by pipe line, by rail, by tankers.

Q The Northern Natural area I am speaking of?

A No, I am talking about the Northwest central area I described. Oh, right now the gas is mainly transported by pipe line.

(Go to page 3111.)

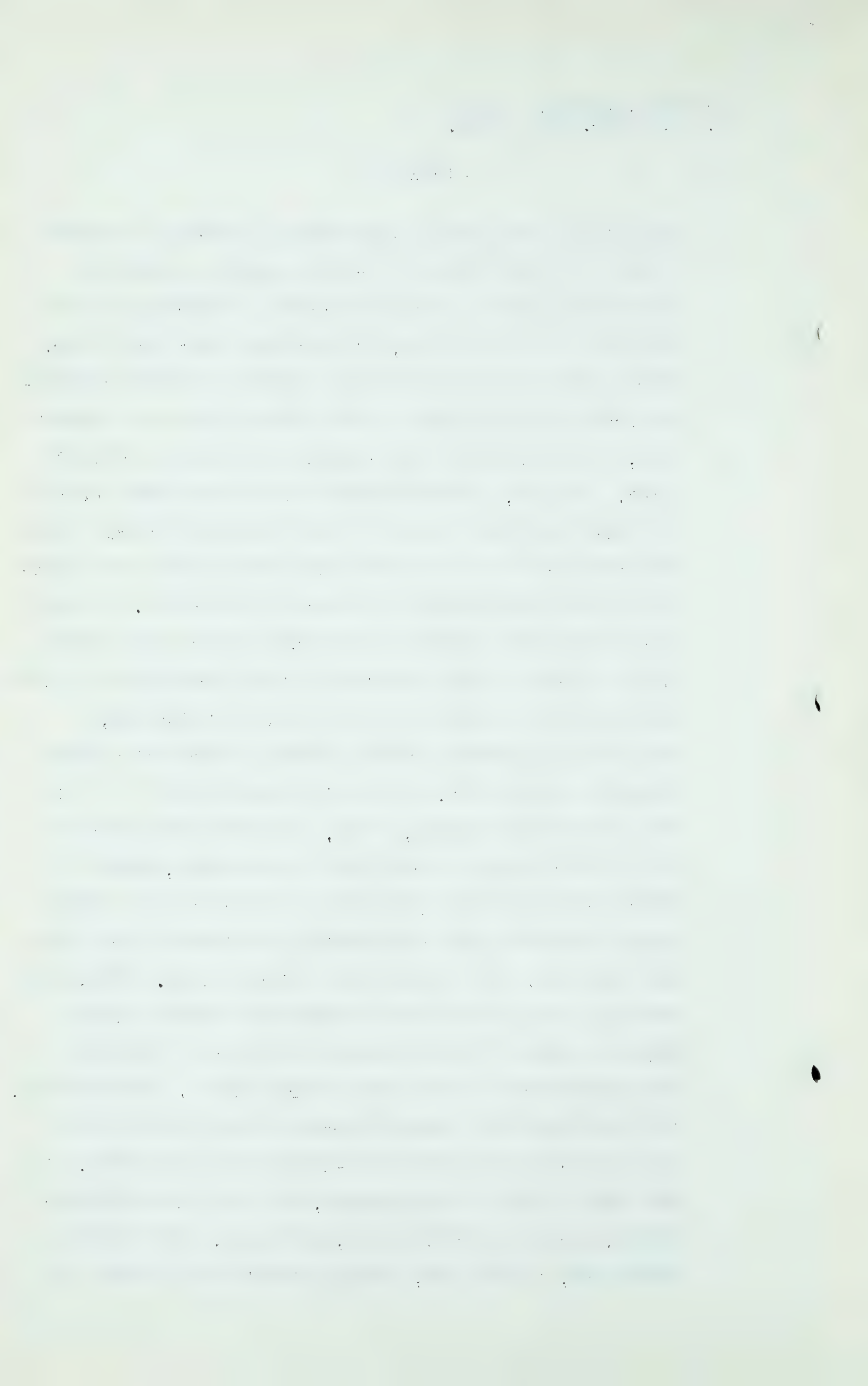
Michael J. Deutch,
Cr. Ex. by Mr. S.B. Smith.

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A There is at the present time already a shortage on which I have not dwelt because I tried to make a distinction between the present industrial growth or shortage of the area and the defence load, if and when we get into a war.

Q There seems to be an increasing shortage of energy throughout pretty well all parts of the United States and Canada?

A Well, I would say that the counsel here has an excellent point. You see, the requirements in an area which is not yet fully mobilized as that of the Northwest Central States and other areas in the middle West have not yet been established with the magnitude that comes after M day. I would also submit that whereas in World War II the first impact of the energy shortage was felt in those areas where we were making ordnance supplies and the impact of aluminum, gasoline and synthetic rubber demands occurred at a later stage of mobilization, it is quite possible that in World War III we have prepared, first, the plant site and pushed to a certain stage of production the aluminum, magnesium metals and we have not yet felt the impact of the ordnance or the reparation and re-assembling of aircraft facilities and servicing. But I would agree with you, Mr. Smith, that we would have a very acute shortage all over the United States in case of war and especially in this area where the shortage was not too bad in World War II. Incidentally, in World War II the energy shortage in the United States was not necessarily the bottle-neck of the war effort. At that time it was the new weapons, the fuels and synthetic rubber, and at a certain stage, man power, but we never really had, I would say, energy with its fuel or fuel oil



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except in certain spots. We never had that as the first bottle-neck of the First War effort but it is possible we might have it in the next.

Q I suppose you would be favourable to the St. Lawrence Waterways also?

A Well, I have not studied the problem but I would not think it is proper for me to take the time of the Board on that, but I will tell you that I do believe in a much closer integration of the industrial development in every field between the Prairie Provinces and the United States, I believe a much more integration than we now have.

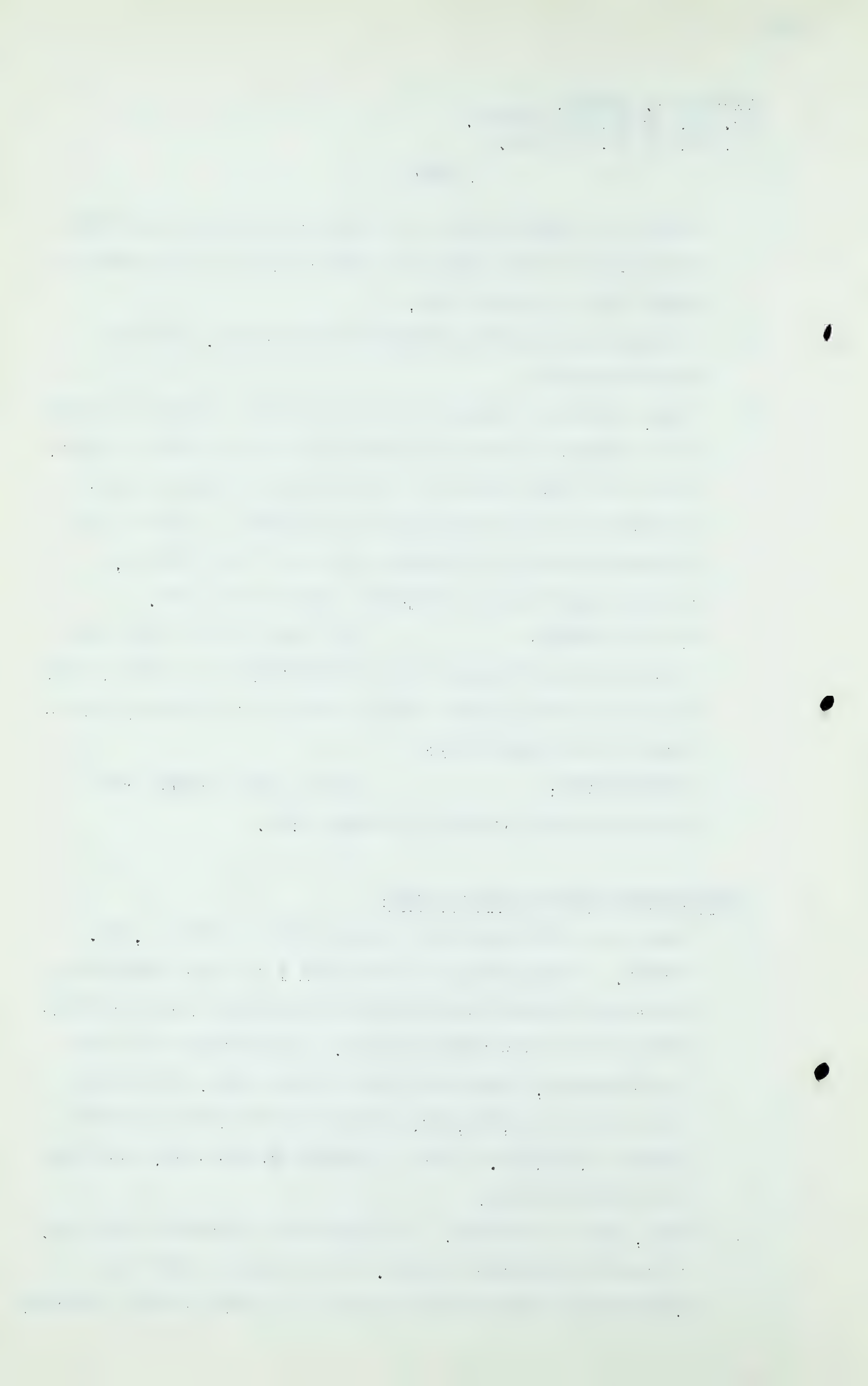
MR. C.E. SMITH: Did you know that Mr. Howe also said that Buchanan would beat Nickle? I wonder, sir, if you are going to sit until 5 had you in mind any possibility of an adjournment?

THE CHAIRMAN: We are not sitting until 5 but we will get cleaned up around 4:30.

CROSS-EXAMINATION BY MR. MILVAIN:

Q There are a few questions I would like to ask you, Mr. Deutch. I am looking at tabulation 1 in your submission and there are some conclusions we can draw from that tabulation that I can hardly credit. In looking at the item of creameries, about the middle of the page, which show total sales of 1,618,000, portion thereof used in the war program 1,010,000. That is roughly 62 per cent, according to my calculations.

A Well, that is factual. It figures out factually that way, it is not indicative at all. It so happens that the Northern Gas System had connected to itself certain creamery



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and food plants which supplied a lot to the Lend Lease program, which was considered as a military program at that time. That also applies to another item here, sugar and flour. It so happens many of the companies connected to their system did a large volume of quartermaster supplying in 1943. That percentage is specific for those customers in that area, it is not illustrative of the percentage of that load in the entire United States.

Q This is all based, I gather, on the year at the top of the first column, 1943?

A Yes, sir. I will tell you how those figures were arrived at. In 1943 for purposes of draft deferments, for purposes of priority, the company circularized those customers who were making statistical reports, each in their specific field, and at a certain date for the past six months, I do not remember whether it was as of the end or as of the twelfth month ending November 1943, they tabulated those requirements and checked them against the war production sheets of those customers, and then they totalled it, and it covered only that group of customers; but then that group were circularized, cement plants and every other plant they had. It was at that time as complete a survey as you could have made. I am trying to have the companies proceed for 1951 in the same way.

Q The fact is, one can not apply the conclusions of Table I to present conditions and get a realistic conclusion?

A I never intended to do that. Under present conditions a sampling of those same creameries have indicated only 5 per cent instead of 60, and I happen to have checked on those run-off sheets and I think I swiped one from the

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company somewhere here.

Q Now, look at tabulation 2 for a moment, please. I suppose there are a number of those customers are interruptible customers?

A Yes, sir.

Q Electric power at the top would be an interruptible customer?

A Well, I would have to check that as against the list. Will you continue the questions, sir?

Q Electric power, meat packing, cement plants, are they all interruptible?

A I do not think so. I think they are all regular customers of the company.

Q Just tell me who they are. There may be some of these customers who are interruptible and some who are not. They are not all firm customers, anyway, I take it?

A Well, I would rather have an officer of the company answer but I can give you the specific names of the companies and he could answer you. The Austin Municipal Power Plant, the Nebraska Hydro District, the Lincoln Municipal Power Plant, and Cities of Blair and Wahoo. I suppose somebody from the company would tell you specifically what the contractual basis is.

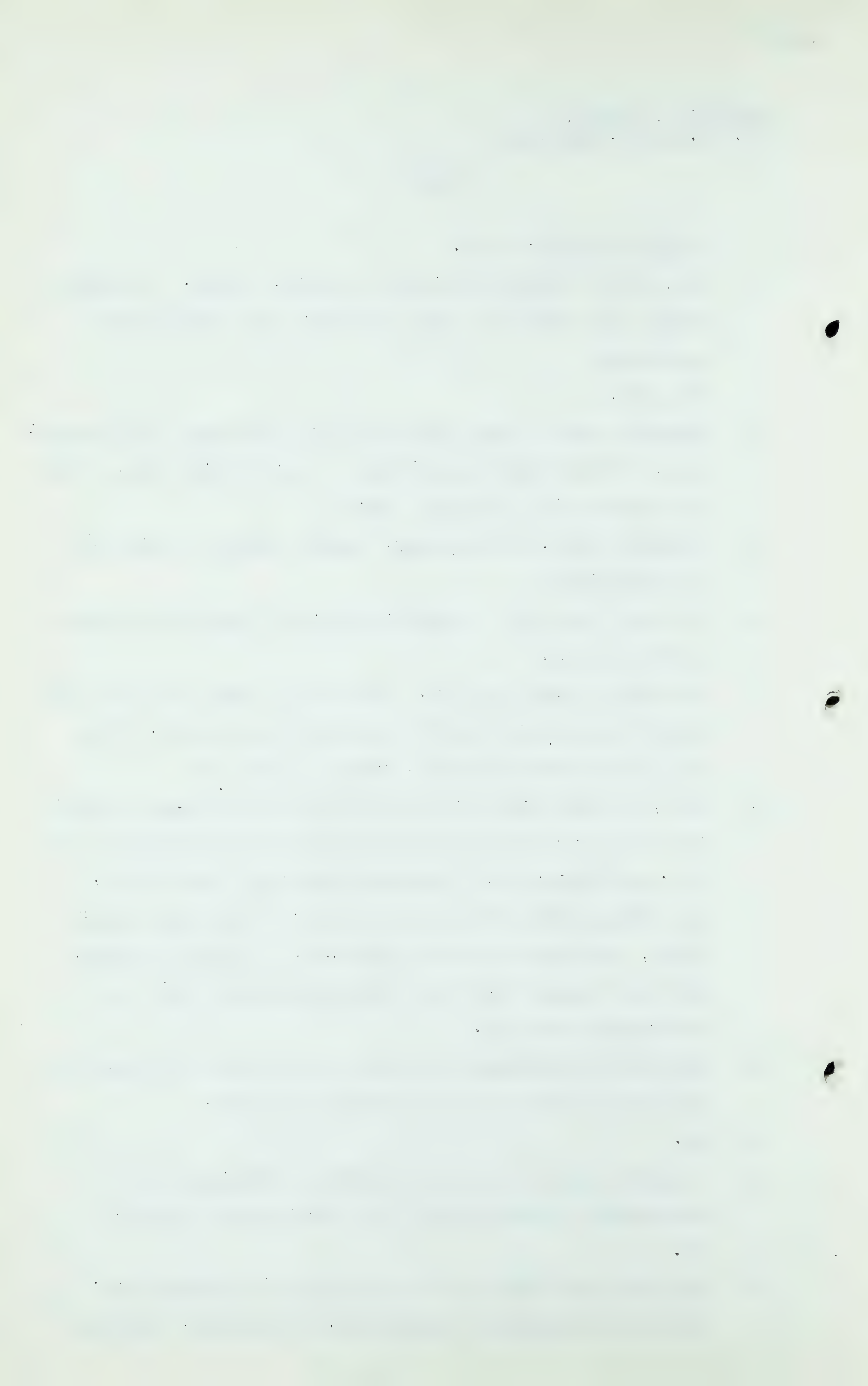
Q Have you any information to tell me whether or not any of those are or are not interruptible customers?

A No.

Q I suppose you are not able to give me information as to whether any of these people are interruptible or not?

A No.

Q You will agree with me in this general conclusion that in so far as there are interruptible customers, the fact



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that they are interruptible indicates they are able to carry on their war effort whether they have got gas or not?

A Well, I would be satisfied in my own mind that according to the procedure which was set up by the Deputy Controller for Gas, war loads wherever possible were not interruptible.

Q But there are many of those customers that are not fully on war loads?

A You are talking now about the power plants. I know it is a standard procedure to put them, and, incidentally, for those that I mentioned, the war load factor that I have adopted is 10 per cent. Certainly there is an interruptible feature. It does not cover 90 per cent. For instance, non-power customers, industrial customers or ordnance plants, wherever possible where it is an old plant, my sampling for 1942 is we always try to make sure that it has most of its load guaranteed on a non-interruptible basis.

Q Any of these customers who are interruptible customers will have stand-by facilities?

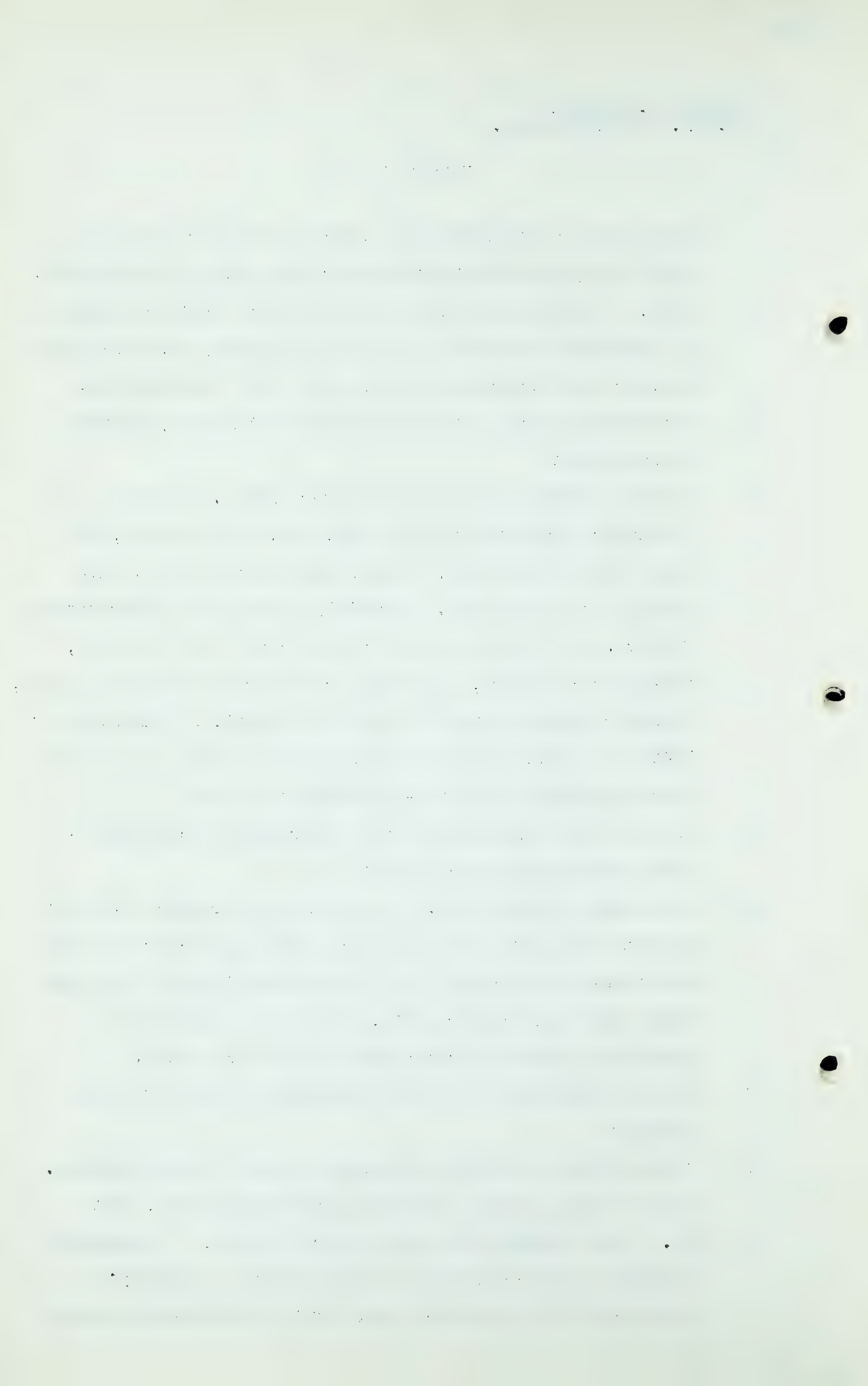
A They might or might not. In the Chicago Ordnance District we have a lot of plants where the limiting factor on their production is precisely the feature that they did not have their full load requirements, there is no stand-by or substitute except to get propane 2,000 miles away.

Q Are you speaking of your own knowledge on some of these matters?

A I am talking of my own knowledge of some of these matters.

Q Some of these plants included in this tabulation, too?

A No. I was talking about the general policy. I suggested already to the counsellor to ask one of the company's officers on the specific status of the commitments towards



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those plants.

Q With respect to the customers shown on tabulation 2, can you tell me whether or not any of them are interruptible or not interruptible?

A No, nor can I tell you what the proportion to the interruptible feature is.

Q Or whether or not they have stand-by facilities?

A I can not tell you at this time, especially since I drew attention of the Board that tabulation 2 is a sampling from a late survey just now in progress. The question is that the vice-president in charge of sales of Northern Natural Gas, Mr. Shomaker, directed to his clients and they were asked to give their maximum and minimum requirements, their stand-by facilities or alternate sources of fuel that they have.

Q Tell me, Mr. Deutch, are you aware of a directive issued by the Munitions Board of the United States to the effect that coal shall be used in preference to either oil or gas where it can be used?

A Yes, I recall that directive.

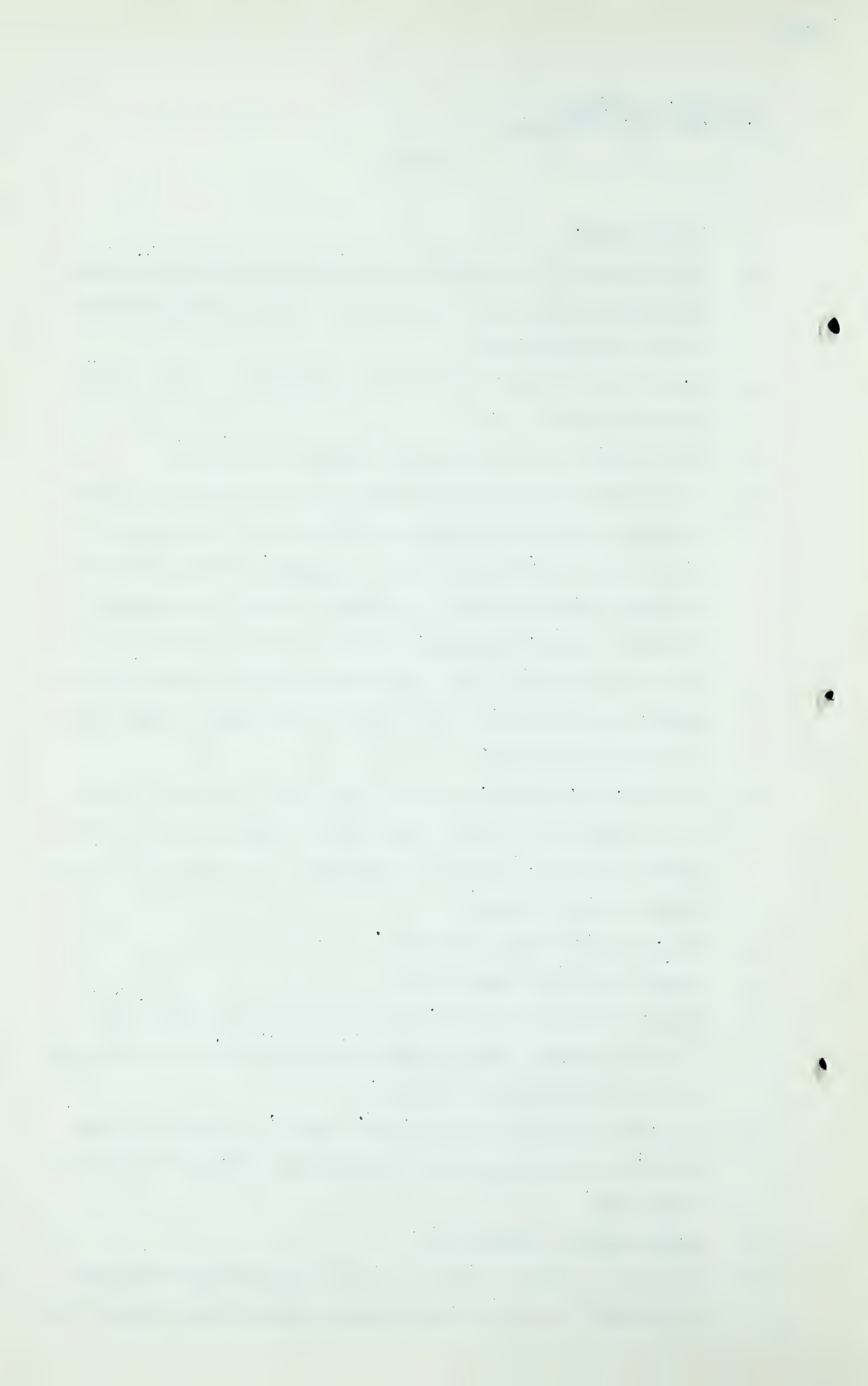
Q There is such a directive?

A Well, there is a policy, and expression of policy, but I do not recall having read the directive, but I did hear such an expression of policy.

Q Now, can you tell me this, Mr. Deutch, if I am not trespassing on secret ground, what do the initials "A.E.C." stand for?

A Atomic Energy Commission.

Q And are you aware that the Atomic Energy Commission made a contract with the East Tennessee Natural Gas Company for



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a minimum of 40,000 Mcf. to a maximum of 60,000 Mcf. per day?

A I know of that contract. I do not know the terms or the details.

Q And do you know that the Joint Atomic Energy Committee of Congress investigated this deal and severely criticized the Atomic Energy Commission for buying the gas instead of using coal?

A I do not recall that investigation.

Q You do not recall the investigation of the Joint Atomic Energy Commission of Congress?

A No. I do not attend all the investigations unless I am called as an expert witness.

Q And you have not heard of it?

A I do not recall having heard of it.

Q Now, you mentioned this thing called taconite?

A Yes, sir, on which I am not an expert.

Q It is up in the Masabi Range, is it?

A It is in the Duluth District, isn't it?

Q It is worked in an area a long way from any pipelines served by Northern, or do you know that?

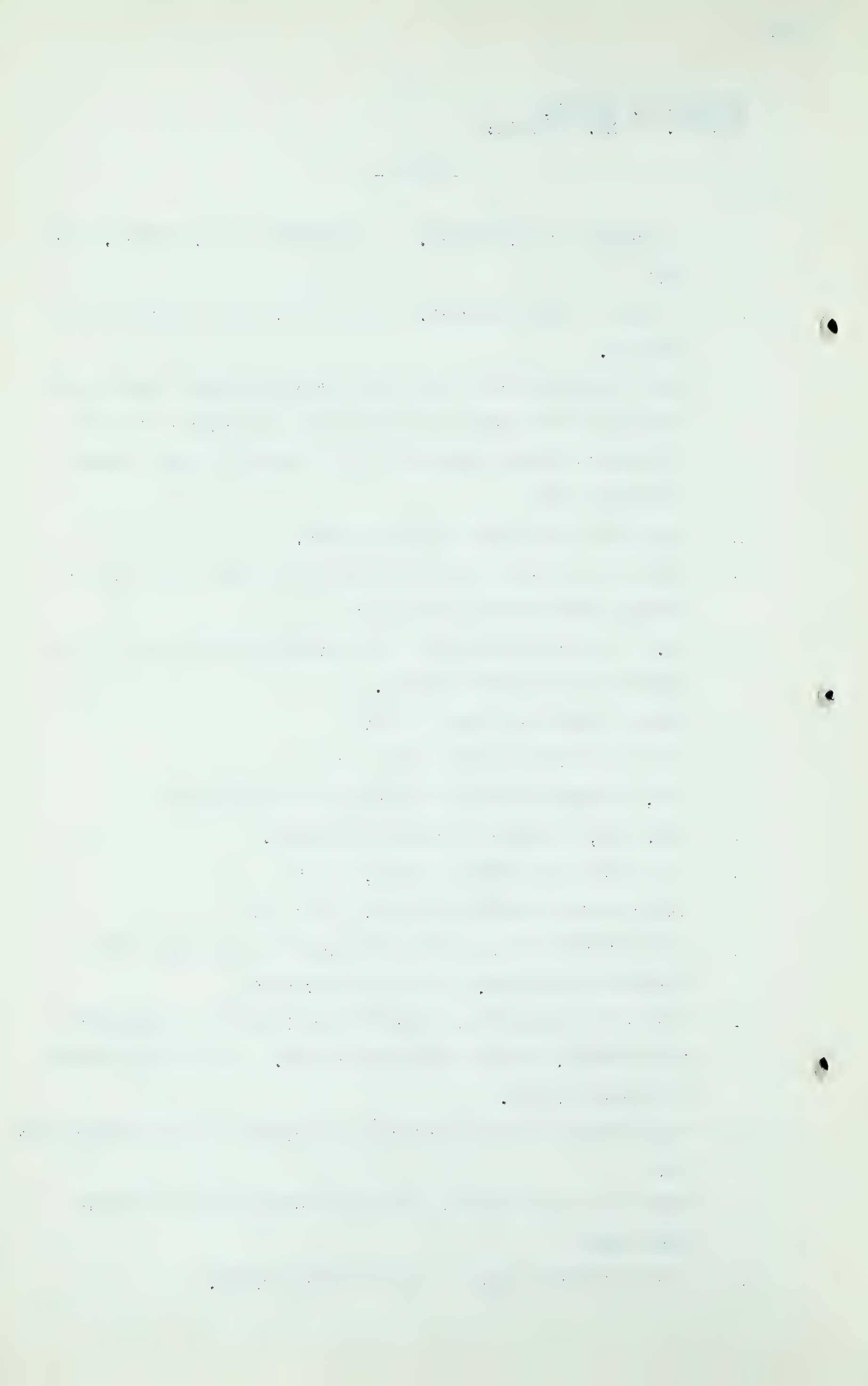
A I do not think this particular development is now served by Northern, or that particular area. I am not an expert on taconite, sir.

Q Do you know whether Northern is serving in that area at all?

A No.

Q And do you know how far removed Northern would be from that area?

A I do not have a map of the Northern system.



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Q Pardon?

A I do not have a map of the Northern system before me. I suppose it is 200 miles.

Q 200 miles?

A I just really don't know.

Q Do you know whether or not -- taconite, I understand, is a very low grade iron ore, isn't it?

A I understand so.

Q And any use of it is now in an experimental stage?

A Yes, sir.

Q And do you know what part gas would play in it other than to supply cheap fuel?

A I could not tell you, sir. I am not an expert on taconite.

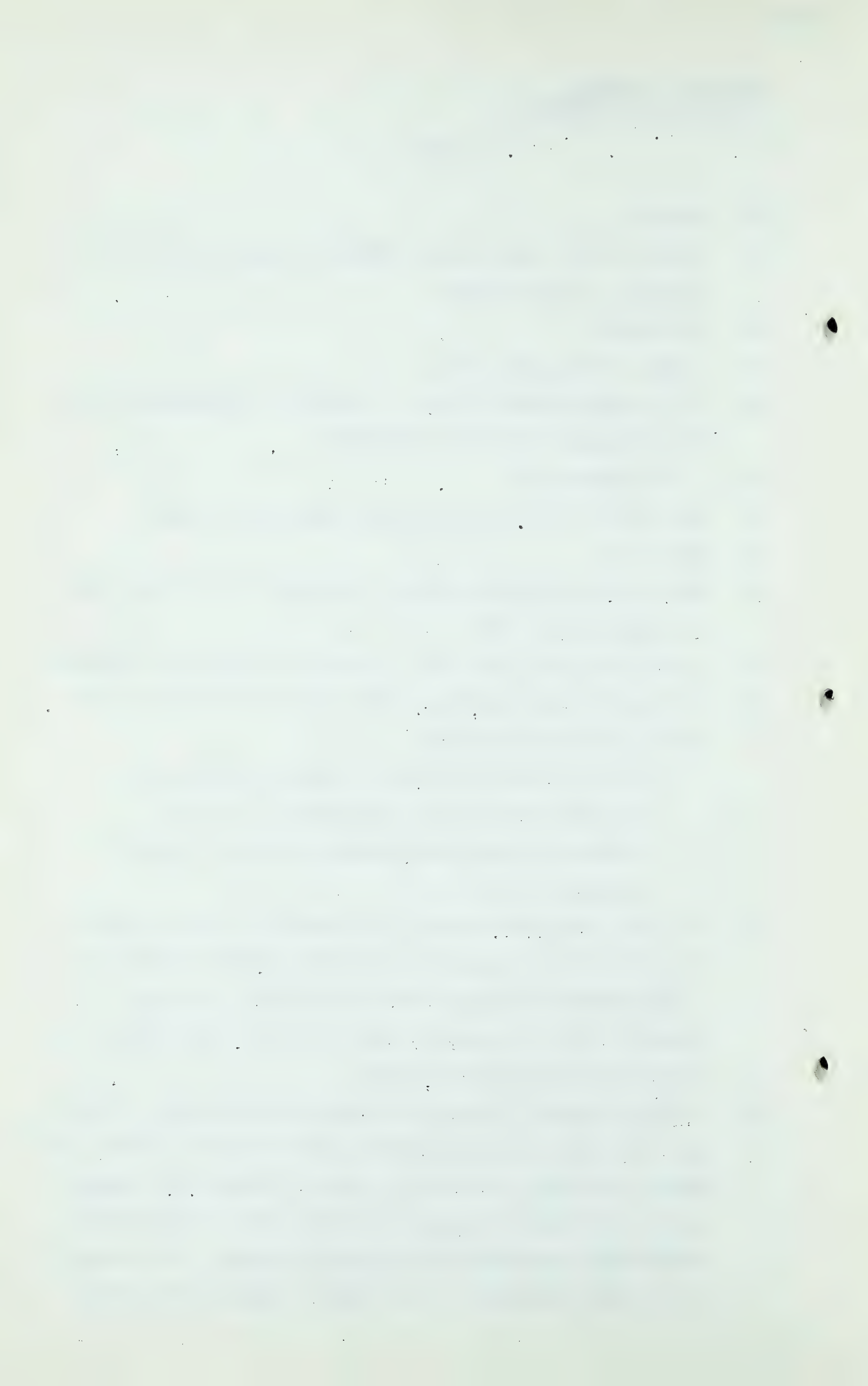
Q Is taconite the marginal mineral that you referred to on page 1 of your submission,

"Security considerations of plant dispersal, an optimum labour market, necessary to develop further both new and marginal mining and mineral resources....."

A I do not refer specifically to taconite. What I referred to is the fact we might be called to increase production from marginal mines and various minerals. Whether taconite falls into that, I would have to check into.

Q Where are those marginal mines?

A Certain marginal mines are in Idaho and Minnesota. There has been quite a program on the part of the U.S. Bureau of Mines in looking for various ores all through the central part of the United States. I do know that we will need a substantial production from mineral sources. If you want me to draw a parallel I could draw a parallel with some-



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thing like the Kootenai District where there has not been much mining.

Q I am afraid you are getting into trouble with my friend, Mr. Nolan.

A I have not included specifically taconite because I do not have any load figures on taconite.

Q All of these places you have been talking about just now are not within Northern territory?

A Not in the past, but should Northern perform conscientiously their role in the defence effort they might be called on to extend a couple of miles here and there.

Q I think perhaps all these applicants had better quit and join in with you.

(Go to page 3120)

John F. Merriam,
Dir. Ex. by Mr. Martland.

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JOHN F. MERRIAM, having been first
duly sworn, examined by Mr. Martland, testified as follows:-

Q Mr. Merriam, you are the President of Northern Natural Gas
Company?

A I am.

Q And I understand that you are a graduate of the University
of Chicago?

A That is correct.

Q And how long have you been connected with the Northern
Natural Gas Company?

A I have been connected with the Company since the year of its
formation, 1930.

Q And you have occupied different capacities until you
attained the office of President?

A Yes, I have served in various capacities during that period.

Q And you are a director of the Midwest Gas Association?

A Yes.

Q And hold certain other offices?

A Yes.

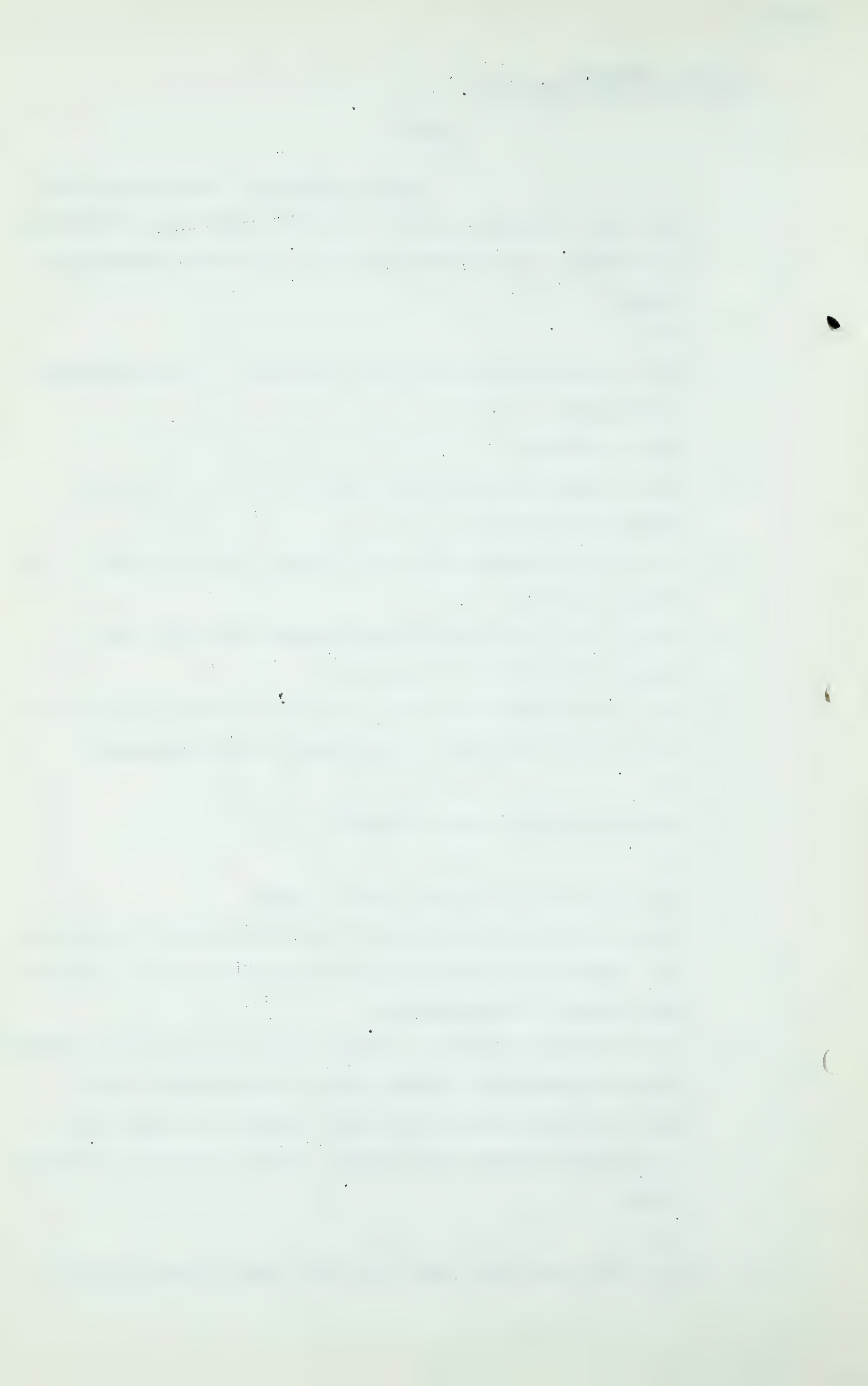
Q Would you mind outlining a few of them?

A I am on the Executive Board of the American Gas Association,
and I am First Vice-President and a director of the Indepen-
dent Natural Gas Association.

Q And we have in evidence a contract which has been made between
Northern Natural Gas Company and the Western Pipe Lines.
Would you mind telling the Board briefly something about
the Northern Natural Gas Company, and the scope of its oper-
ations?

A Yes.

Q By the way, you have here the 1950 Annual Report of the



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Northern Natural Gas Company?

A Yes, we have.

MR.MARTLAND: It might be of some assistance to
the Board, Mr. Chairman, and I tender it as an exhibit.

THE CHAIRMAN: Exhibit 115.

MR.NOLAN: May I have a complimentary copy,
please?

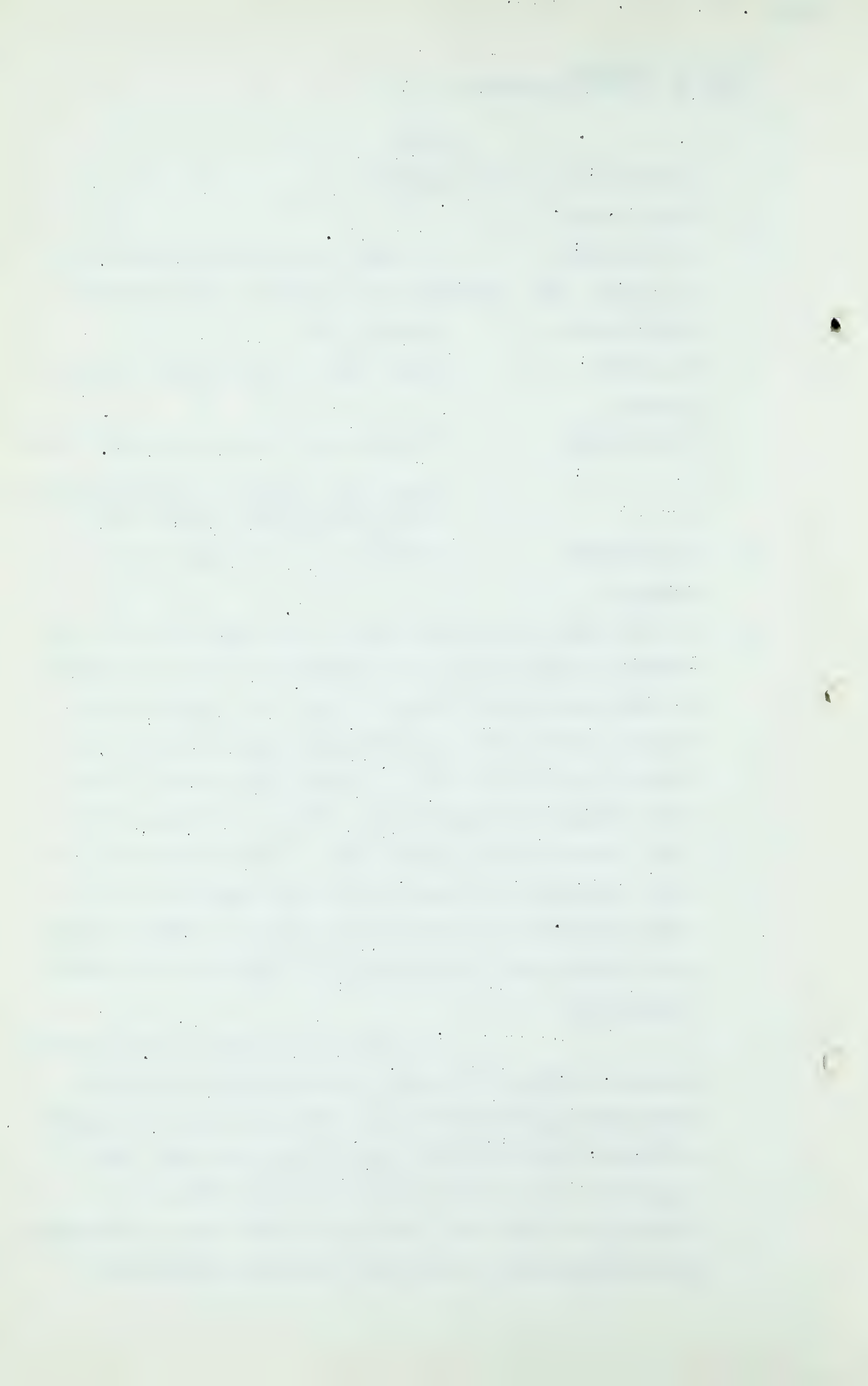
MR.MARTLAND: We will give you an autographed copy.

1950 ANNUAL REPORT OF NORTHERN NATURAL
GAS COMPANY MARKED EXHIBIT 115.

Q MR.MARTLAND: Perhaps you could carry on, Mr.
Merriam?

A The Northern Natural Gas Company was organized in 1930, and
during the past 20 years has constructed a pipe line system
of approximately 6000 miles in total. It operates a pipe
line system from the Texas Panhandle Gas Field of Texas,
and the Hugoton Gas Field of Kansas, Oklahoma and Texas,
a line going up through Kansas, Eastern Nebraska, Western
Iowa, Southern South Dakota, and Southern Minnesota. In
that territory the Company serves 229 communities having a
total population of something in excess of 2,000,000 person ,
and in which there are 600,000 plus consumers served with
natural gas.

The capacity of the pipe line system
has grown since the end of World War II from something
approximating 240,000,000 cubic feet per day, to a capacity
of 600,000,000 cubic feet, during the past year. The
capacity is now in the process of being increased to
675,000,000 cubic feet a day, and we have pipe, compressors,
and substantially all materials onhand to increase the



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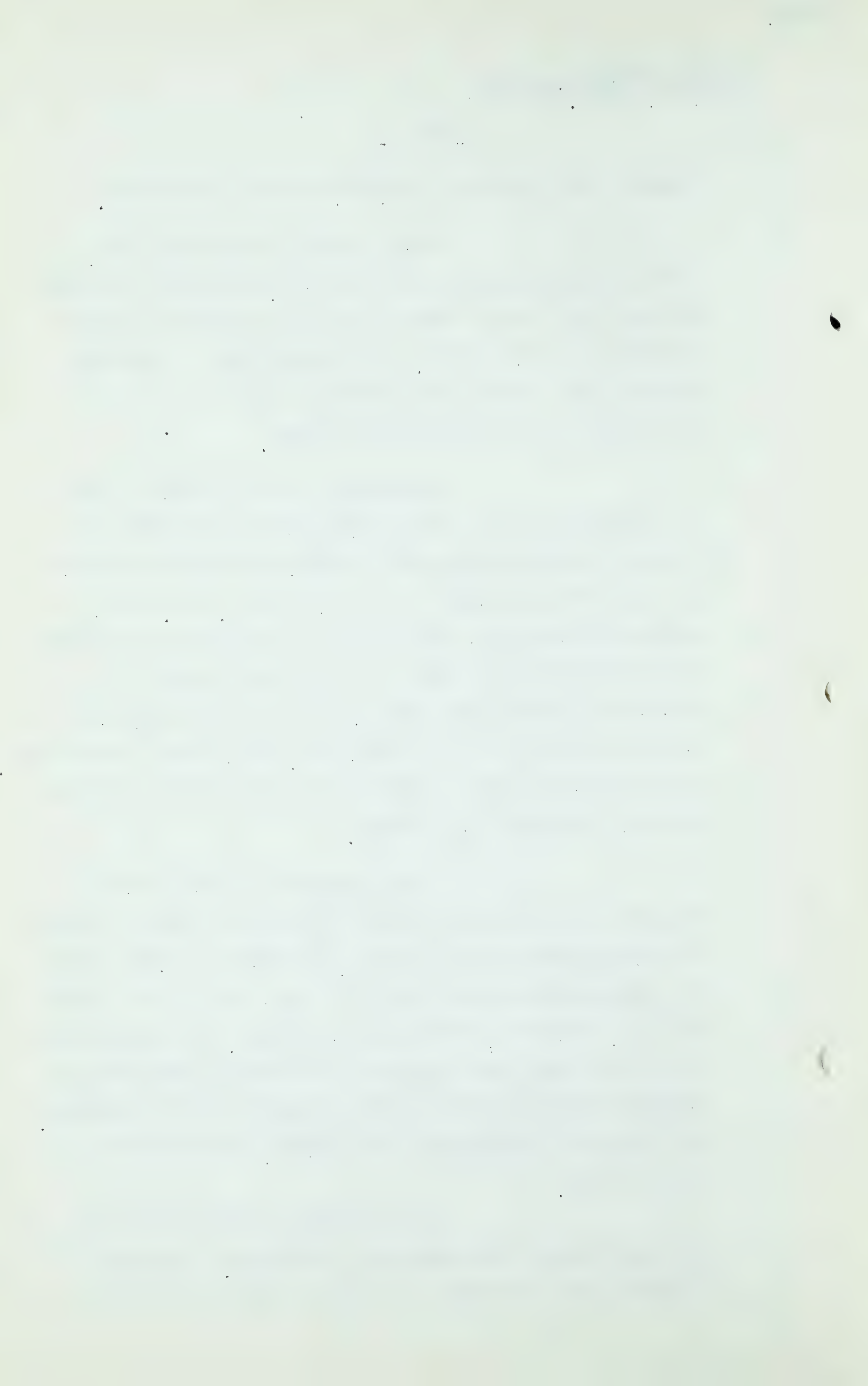
capacity next year to 825,000,000 cubic feet a day.

Since the end of World War II, during practically the entire period, the Company has been, we will say, short of gas so far as its possible ultimate consumers are concerned. The availability of steel has prevented the Company from building capacity as fast as the demand of the consumers has grown.

During most of that period I would say substantially all of the communities purchasing gas from the Northern Natural Gas Company have had to restrict the sale of natural gas to new consumers. Mr. Wrench mentioned Minneapolis where they have a number of thousands of house-heating customers who have signed up and are waiting for natural gas service as fast as new capacity is made available to such community, and to other communities, and the waiting list of customers is there in those communities and a new list is forming.

The circumstances which exist are such that the prices of oil and coal in the territory served by Northern Natural Gas Company, the prices of those fuels are substantially higher than the retail prices for natural gas and, therefore, natural gas is wanted, and natural gas is a better fuel than either of the other two fuels in our judgment and, apparently, in the judgment of the consumers. The demand has skyrocketed very greatly since the end of World War II.

As the market for natural gas of Northern Natural Gas Company has increased, it has been necessary for the Company to obtain additional sources



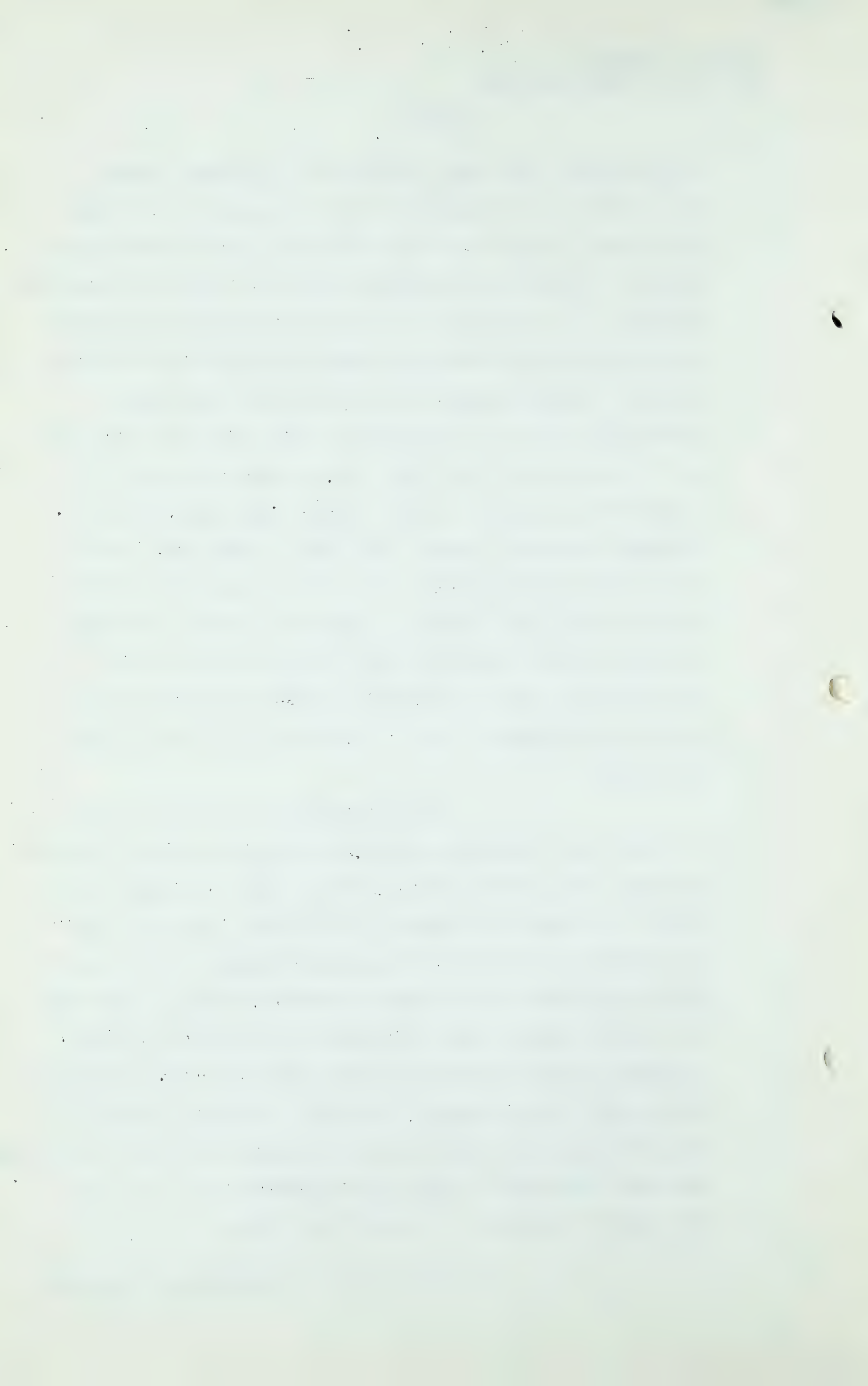
John F. Merriam,
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of gas supply, which it is doing on a continuing basis. The total reserves available to the Company at this time approximate 6 trillion feet, which has grown in the last 10 years, I do not have the exact figures in mind, but something around $2\frac{1}{2}$ or 3 trillion feet of gas reserves in the ground. At the present time the gas reserves in the area from which Northern normally draws its primary source of supply, practically all of the reserves in those areas are now tied up to various pipe lines and various retail markets. In other words, in order to meet the growing requirements of Northern Natural's system, which Mr. Shomaker went into in some detail on this record, it becomes necessary for Northern Natural Gas Company to expand its sources of supply to areas not now connected with the gas system, in the connection we have, as shown in our annual report, and as previously referred to here in examination of some of the witnesses.

We have explored the possibilities of obtaining natural gas from the Williston Basin of Western Nebraska, the Permian Basin of West Texas, and Eastern New Mexico, southeast New Mexico, and we have carried on our exploratory efforts into the Anadarko Basin, which is the area lying north of the Texas Panhandle Field, and East of the Hugoton Field, which is a deep gas territory, as distinguished from the Hugoton Field, where the gas is approximately 2800 feet in depth. We have drilled, I regret to say, four deep test dry holes in a row in that area, carrying the test wells down to approximately 6000 feet. It was an expensive process, as you all well know.

We have had a considerable amount of



John F. Merriam,
Dir. Ex. by Mr. Martland

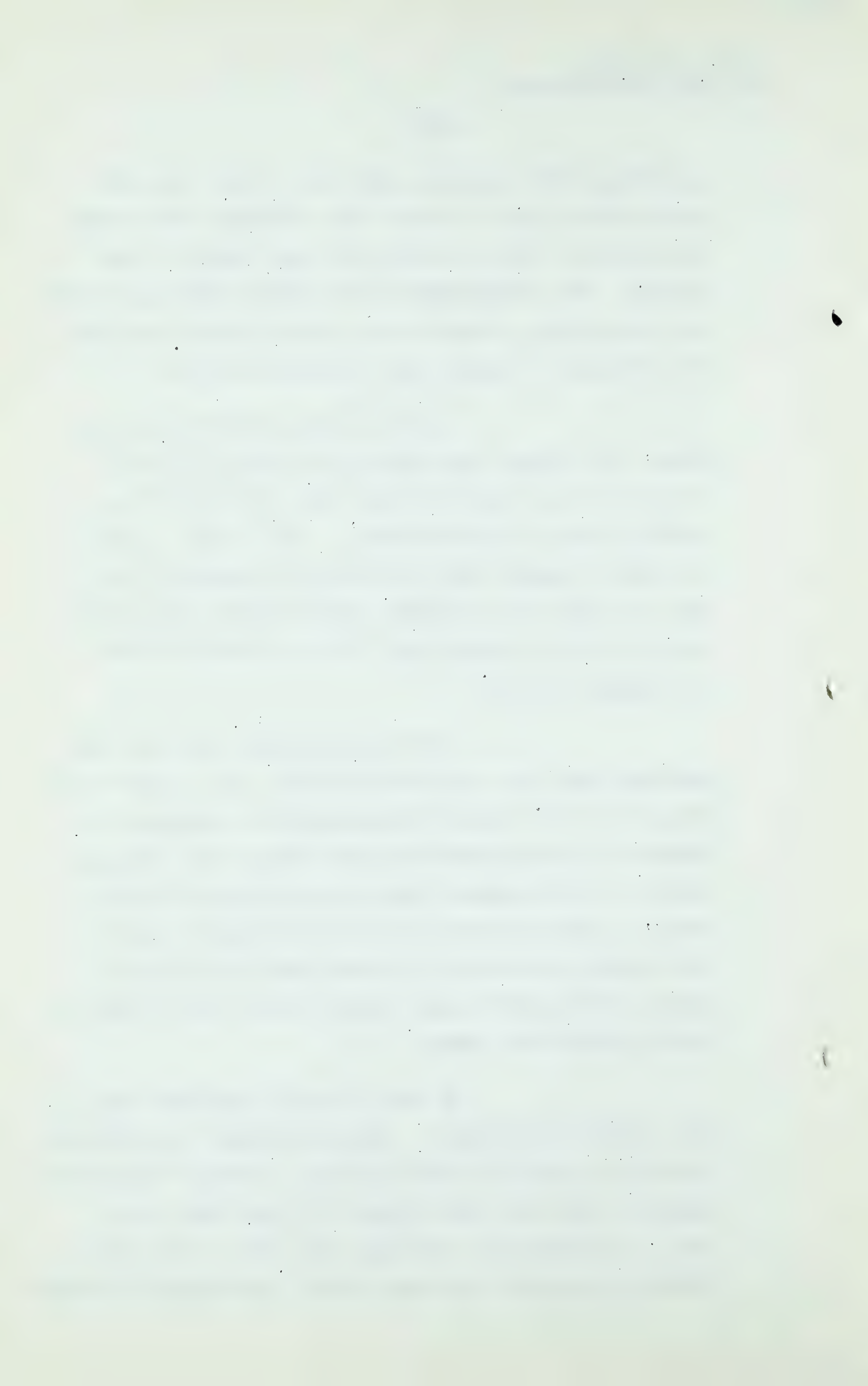
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negotiation with a proposed pipe line project from the Permian Basin area, to which I have referred. These negotiations may or may not result in a gas supply to this Company. The availability of the supply itself has not yet been conclusively demonstrated, and the negotiations for the obtaining of the gas have not been concluded.

So far as Western Nebraska is concerned, the Company has something in excess of 50,000 acres of its own leases in that area, and we have been keeping track of the development, but, to date, there is no source of supply which is adequate to support a pipe line some 400 miles in length, which would be required in order to turn the natural gas into the Northern Natural Gas Company's system.

The Williston Basin, which has been mentioned here, has excellent prospects, but we cannot sell prospects to Mr. Wrench of Minneapolis Gas and Light for delivery to his customers who would like to have the gas. There is not an adequate supply of gas in the Williston Basin, nor does it appear that over the next few years that supply will develop to a point where there will be proven reserves which might support a pipe line of approximately 500 miles in length.

We have looked at the Gulf Coast area of the United States. We have surveyed the information generally in connection with such area, although we have not pursued it with the same diligence we have every other area, as practically every major pipe line in the United States is taking gas from that source, and they have absorbed



John F. Merriam,
Dir. Ex. by Mr. Martland

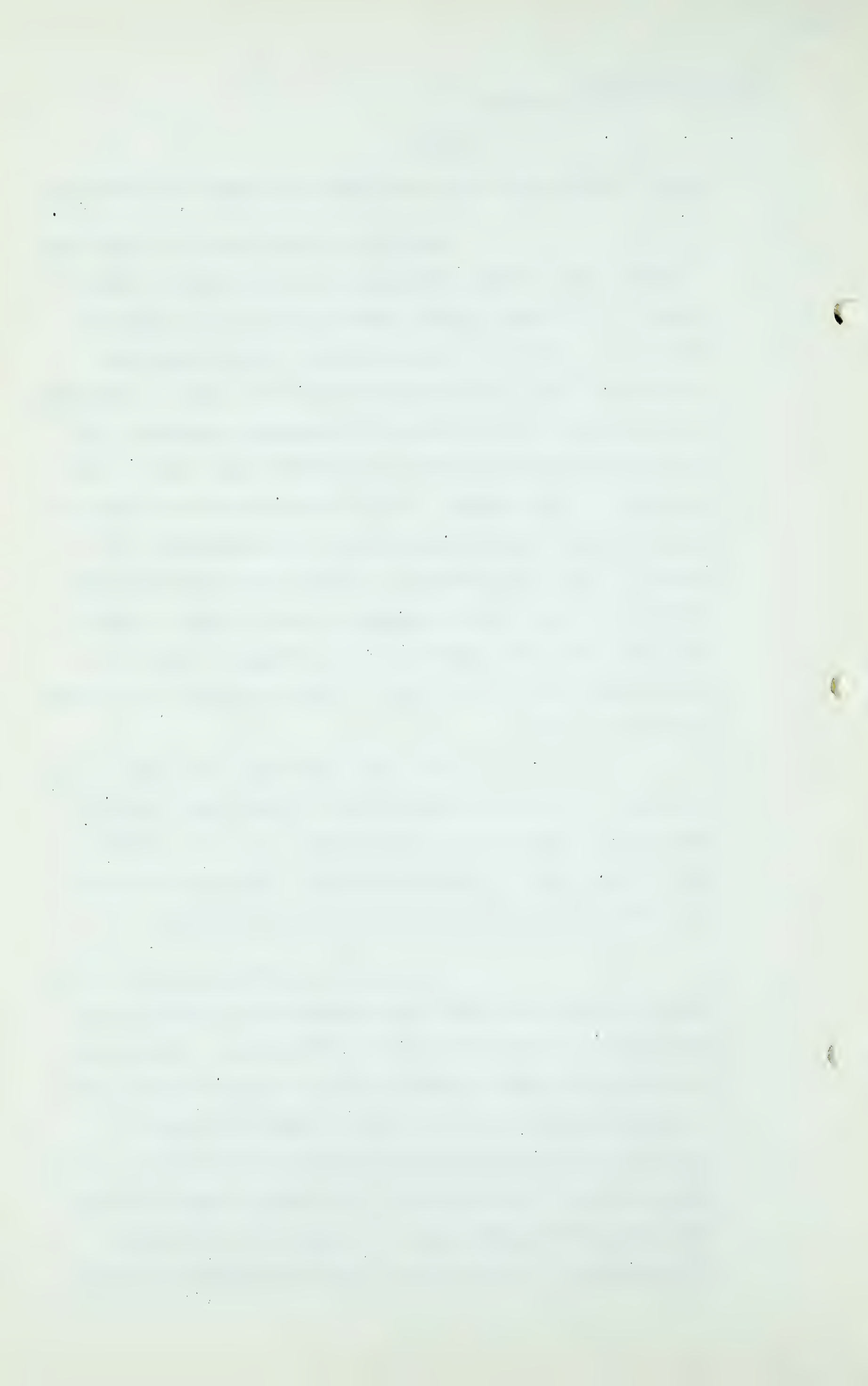
- 3125 -

substantially all of the available gas supply in that area.

We have for some period of time been keeping track of the development of the sources of gas supply in Southern Alberta particularly, and in Alberta generally. It is our understanding, from information available to us, that in Southern Alberta there is something in excess of 2 trillion feet of proven gas reserves, as distinguished from probable or possible, which are not now connected to any market. We do not know whether that gas is surplus gas which Canadians will have available for export to the United States, but we have contracted with the Western Pipe Lines Company so that if there is gas made available for export outside of Canada, that we would like to have any volume of that gas which can be made available to us.

I go back and repeat the point, that there is, so far as we understand, a proven gas supply in that area. There is no other source of 1 or 2 trillion feet of gas that is available to us at this time to meet the pressing requirements of our market territory.

It is quite a difficult thing for the utility serving our 229 or 230 communities to control the development of load along those territories. We have had to establish a form of what we call a contract demand rate on our pipe line system by which we limit the amount of gas that is available to any community on any day to a specific amount, and there are very severe penalties which the local utility must pay if it takes more than that volume of gas on a day when we need the capacity to serve



John M. Merriam,
Dir. Ex. by Mr. Martland

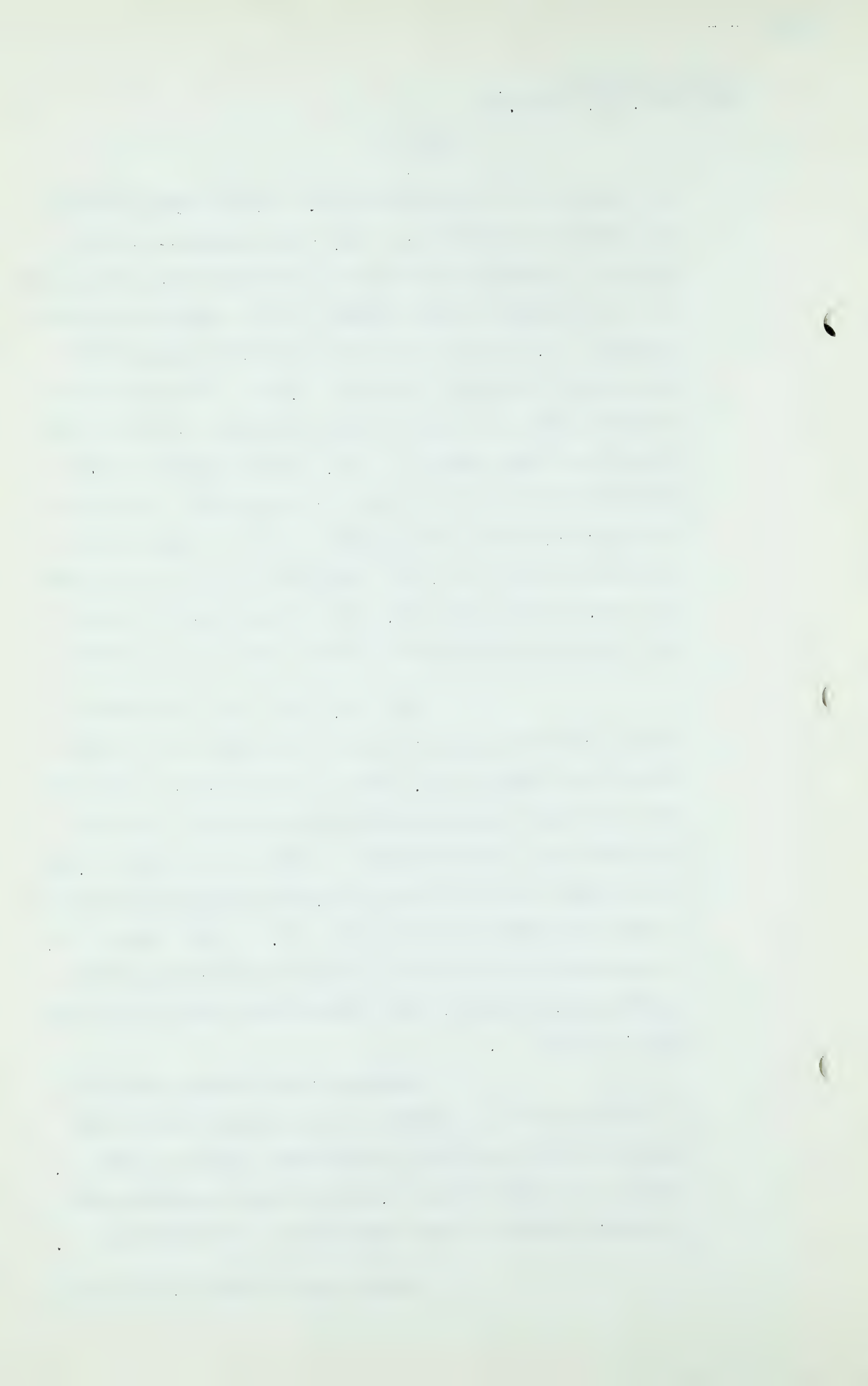
- 3126 -

our contractual commitments. Those severe penalties were not suggested by Northern, they were suggested by the utilities themselves in order to make sure that there would be no overdrawing by one company at the expense of another company. It is a very difficult job for communities to keep their load under control. It is a lot easier in a community where you have no gas whatsoever, to say to the residents of that community, "You cannot get gas; your neighbour does not have gas; no one has gas", than it is to be able to talk to some member of the community whose neighbour has gas, or whose neighbours on both sides have gas, and he wants gas, and they are purchasing fuel at a cost very substantially less than others in the community.

Now, there has been a tremendous growth of housing within an area served by the Northern Natural Gas Company, and there is every reason to believe that that will continue as materials are made available for such type of construction. These new houses, if they are designed one way for gas, they are designed another way if they are constructed for coal, or oil fuel supply, and it presents a very distinct problem to the local utility company, the problem of new houses being constructed from time to time.

I mention those things because I do think that it is important that Northern Natural Gas Company be able to obtain a sufficient supply of gas, timed at the right time, so that we can reasonably keep up with the demands of the consumers in our territory.

I might mention that the utilities



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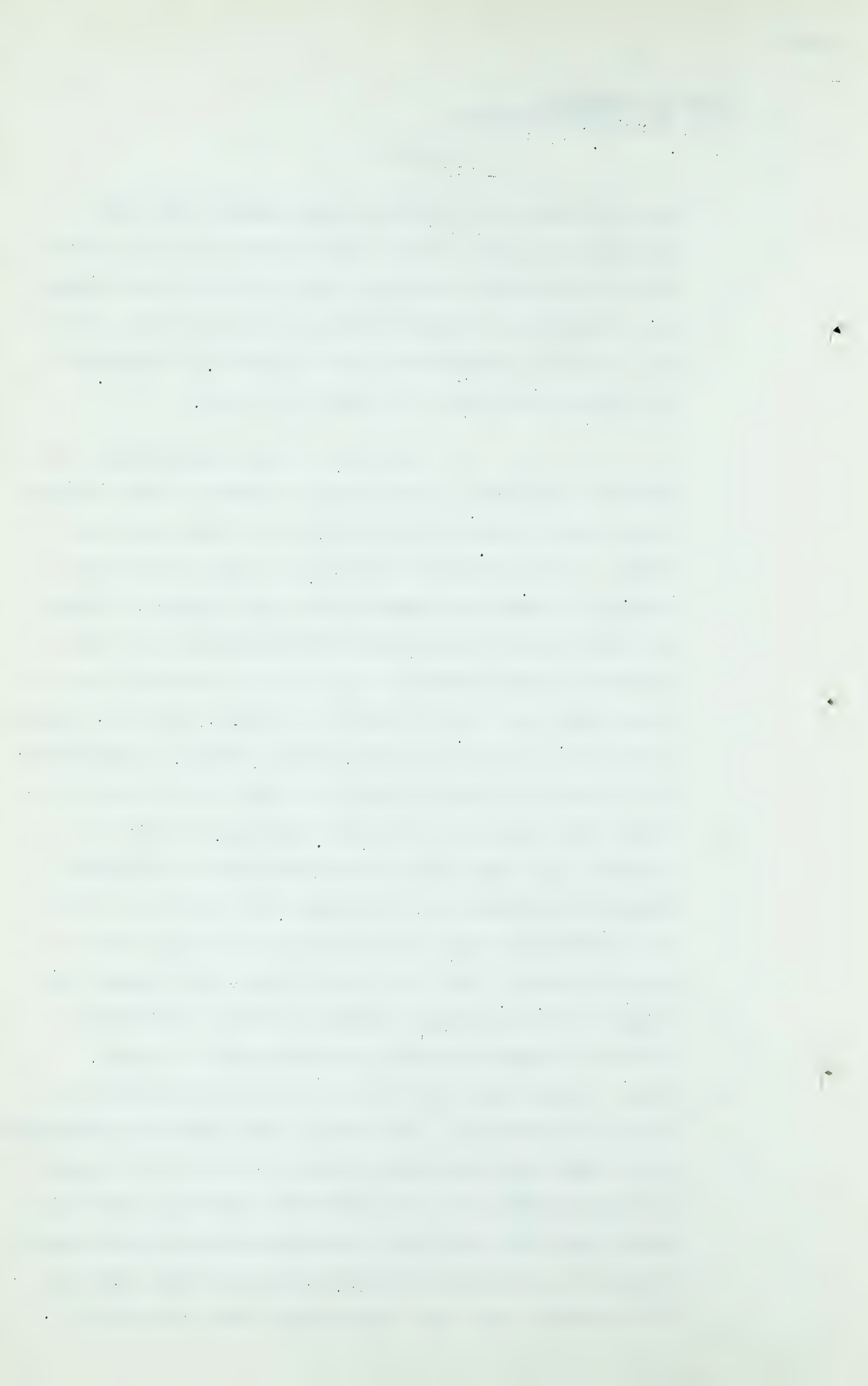
- 3127 -

are all faced with franchise requirements when they undertake to serve the gas requirements of their community, and in their franchises they are faced with meeting the obligation contained therein, and we, in turn, have to, in effect, under-write that obligation, because we are their sole source of natural gas supply.

We have, in our negotiations with Western Pipe Lines, contracted for upwards of 100 million cubic feet of gas. We would be glad to take more than that. As Mr. Shomaker has said, we have a very large backlog of immediate demands from our consumers, because we will be short by upwards of 150 million feet a day of meeting the requirements of our utility customers for the year 1952, that is, the winter of 1952-53, that is, without taking care of the 1953 requirements, which, I understand, is the earliest date at which this gas will be available.

Q Under this proposed system, Mr. Merriam, the line of Western Pipe Lines would connect with that of Northern Natural Gas Company at the border, and there would then be a system tied into various sources of supply in the United States. Would you care to make any comment with regard to the possible advantages of those alternate sources of supply from the Canadian point of view?

A Yes. I would think that there would be particularly two points of advantage. One would be the immediate advantage that comes about wherever you are if you have the source of supply coming from two different contracts, and if you have a pipe line you have the ability to have some flexibility of continuing service in the other area, that is, if you have a pipe line interruption from one source.



John F. Merriam,
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You have a second and more remote advantage, and is, perhaps, a contingency that may never arise, but Northern Natural Gas Company does present to Canada a possible future advantage in that as Northern Natural Gas Company is connected to or available to potential sources of supply in the United States, and substantially all of the potential sources of supply as distinguished from proven existing supplies, if the gas reserves of Canada do not develop as are anticipated, and the reserves in the United States develop to a greater extent than anticipated, it could be that down the road we might be of great service to Canada in providing a source of natural gas supply to them.

Q Just answer any of my learned friends, Mr. Merriam.

.....

CROSS-EXAMINATION BY MR. NOLAN:

Q Mr. Merriam, I understand that you are an expert on taconite?

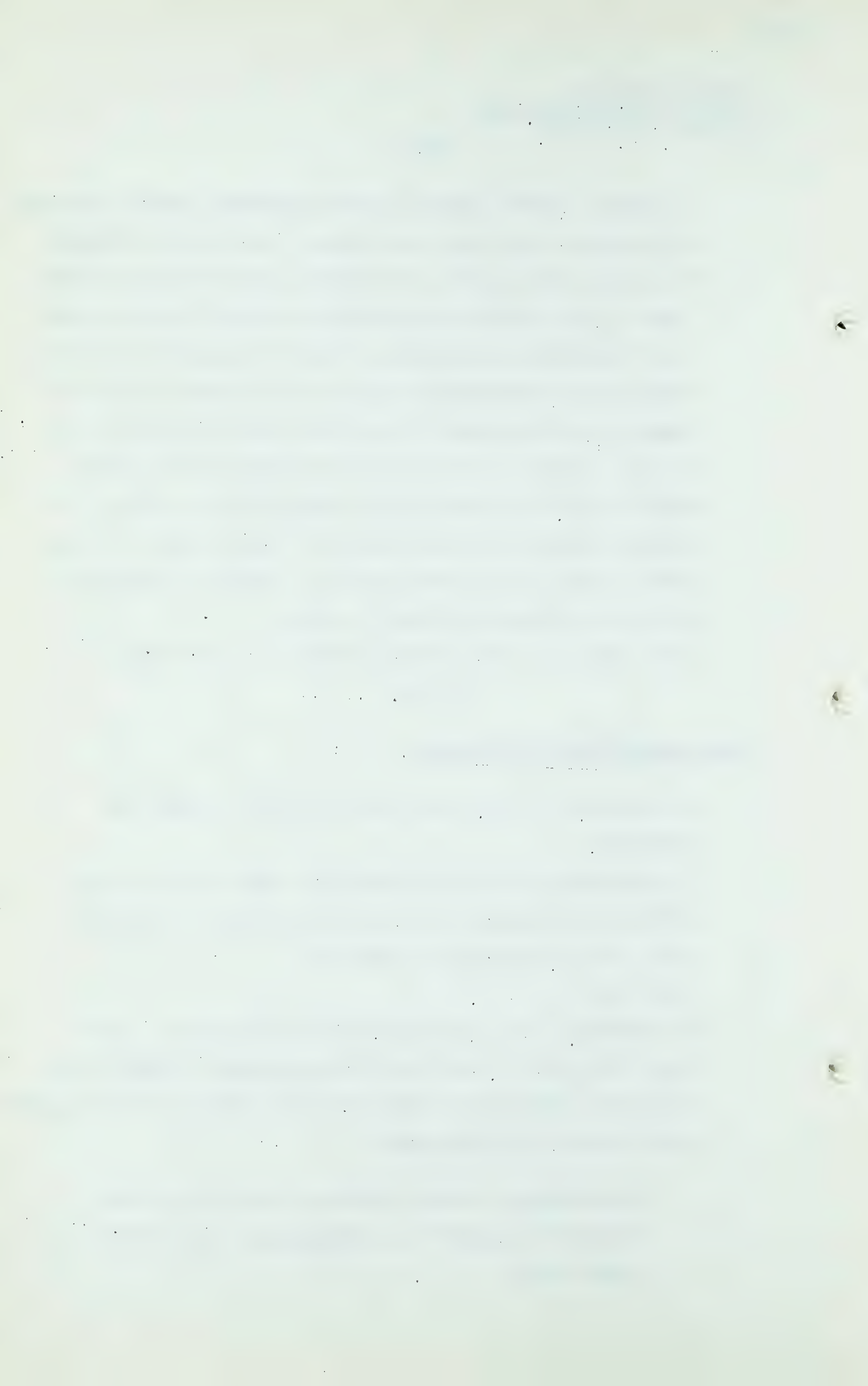
A I appreciate the vote of confidence expressed by several previous witnesses, but I am not an expert on taconite.

Q Well, I am awfully glad to hear it.

A And so am I.

Q Mr. Merriam, I was looking at your Annual Report for the year 1950, and in particular I was looking at pages 14 and 15 of that publication, and under the heading of "Gas Supply" there appears this statement:-

"The Company's proven reserves at the end of the year were estimated to approximate 5.6 trillion cubic feet."



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That is the end of the year 1950?

A Yes. That figure is now approximately 6 trillion.

Q It has gone up?

A Yes.

Q Mr. Merriam, at last year's rate of sale how many years' supply would be provided by 5.6 trillion, or approximately 6 trillion cubic feet?

A It is a mathematical calculation which I do not happen to have made on it.

Q If I suggest to you that it was 34 years, would you agree with me, if I assured you that I did not make it?

A As long as Mr. Schoales did not make it, I would accept it.

Q He did not, I can assure you. All he does is figure interest. Looking at page 16 of the Annual Report, Mr. Merriam, I see that there are set out there some areas of possible sources of additional gas supply?

A Page 15?

Q Yes, on 15, in Map form?

A Yes.

Q And something was said this morning about the distances of some of these areas from your pipe line system, and I think the figures were, Gulf Coast 500 miles, Elk City, Oklahoma, 130, the Permian Basin 250, and Western Nebraska 400. I think that information was gleaned from Docket No. 1618.

A I believe that is correct.

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Q Do I understand you to say, Mr. Merriam, that those sources of supply are not available to you at the present time?

A They are labelled as possible sources of supply.

Q Well, what is to be done in order to bring them into the orbit of your operation?

A First you have to find the gas.

Q Is there not some gas in some of these areas you have set out here?

A No.

Q There is some at Hugoton, is there not?

A The point I endeavoured to cover in my statement a short time back. In the Hugoton field, so far as the so-called shallow gas is concerned, there is now no major additional source of supply available.

Q But it has been suggested that there might be deeper production obtained in the Hugoton field?

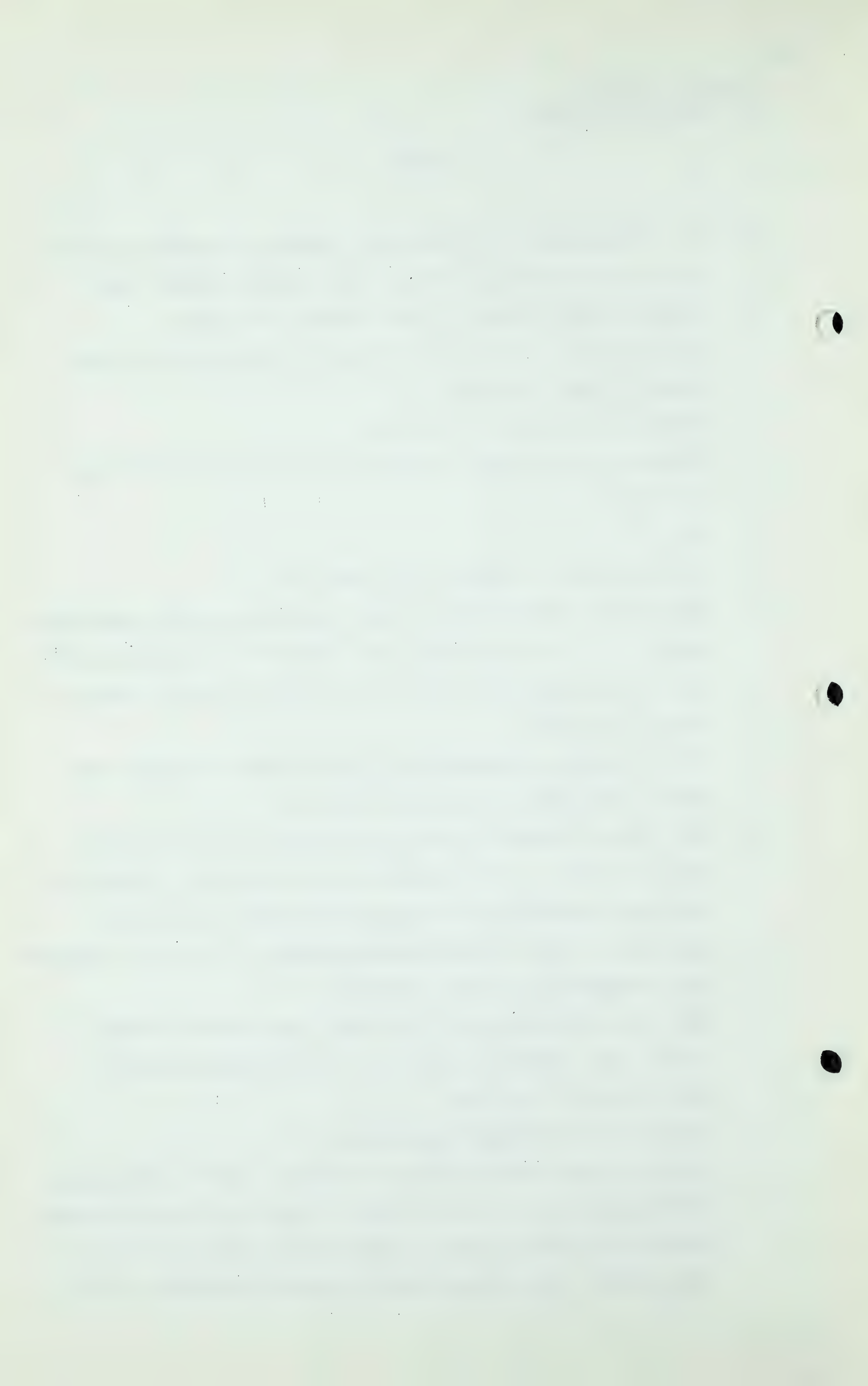
A Yes, and as I stated we have had the bad fortune to drill four dry holes in our looking for that deep gas. There is not now a known source of proven gas supply in the deep gas fields of the Anadarko Basin available for sale to support any substantial pipe line extension.

Q What about Panhandle, is there some gas available there?

A In the Texas Panhandle there is no substantial amount of natural gas at this time.

Q Would deeper drilling produce any?

A There have been many millions of dollars spent in that area in the search for the deeper gas. They have found some small amounts of additional gas in some areas, but there is no substantial volume of gas proven reserves available at this



John F. Merriam,
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time in this area.

Q Is some Panhandle gas sold to carbon black plants?

A A small amount of it, yes.

Q That is something that could be discontinued, or perhaps should be discontinued, if uneconomical and that gas could be used for fuel.

A I doubt if the carbon black companies would agree with you on that. We have discussed it with the carbon black plants and I might say that in the case of gas going to the carbon black it comes primarily from areas where the pressure has been decreased and the gas supply has depleted to the extent so that the supply from this source would be a matter of 10 or 15 years at the most.

Q Now, returning to the Hugoton field for a moment, is there some acreage in that field that is not now dedicated?

A If there is it is a very, very small amount, I will guarantee.

Q There is some, then, is there?

A There are a few scattered pieces of leasehold available here and there. It is a very small quantity. It has been thoroughly combed.

Q The reason I mentioned these matters is because they were put forward at the hearing of Docket 1618 by Mr. Davis, on your behalf. He was there endeavouring to show what the potential reserves were that could serve your company, wasn't he?

A In Docket 1618?

Q Yes. Or am I wrong about that?

A Mr. Davis' exhibits in Docket 1618, which is our 825 application, relate to both deliverability and existing reserves.

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Q Didn't he deal with the question of potential reserves?

A It certainly is not my recollection if he did, Mr. Nolan.

Q I may be wrong, Mr. Merriam. I was told, and please correct me, that he suggested in the first place that there might be an extension of some or all of the present short-term contracts. In the second place, he suggested that the Hugoton acreage not now dedicated might be utilized. In the third place, he suggested that there might be purchased from the Panhandle field gas now sold to these carbon black plants, and then he suggested West Texas and New Mexico gas for delivery to the southern terminus of your system and lastly, he suggested that there might be deeper production in the Hugoton field.

A Well, let us assume that he did. I do not recall it, but let us assume he did. The extension of the short-term contracts is from acreage that is already and has for some time been dedicated. It is not an additional source of supply. It is a source of supply merely lengthening the life of the supply now coming to the company.

Q It is a source of additional supply but not an additional source of supply?

A You are away ahead of me.

Q No, I am not trying to be smart about it?

A I understand that.

Q You follow what I mean, do you?

A I think I do.

Q There has been some discussion here about a contract that might have been entered into, and I might frankly say I am glad was not, between the El Paso Company and the Fish Corporation. Have you had any negotiations with the

John F. Merriam,
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El Paso people?

A Yes, we have.

Q Have they gas for sale now?

A So far as I can find out, they do not have gas for sale and, so far as I understand, all of the gas that they have available is required for their California markets.

Q In any event you have made no deal with the El Paso although you have tried, is that the situation?

A I think that is a fair statement.

Q That is a supply very conveniently located with respect to your lines, is it not?

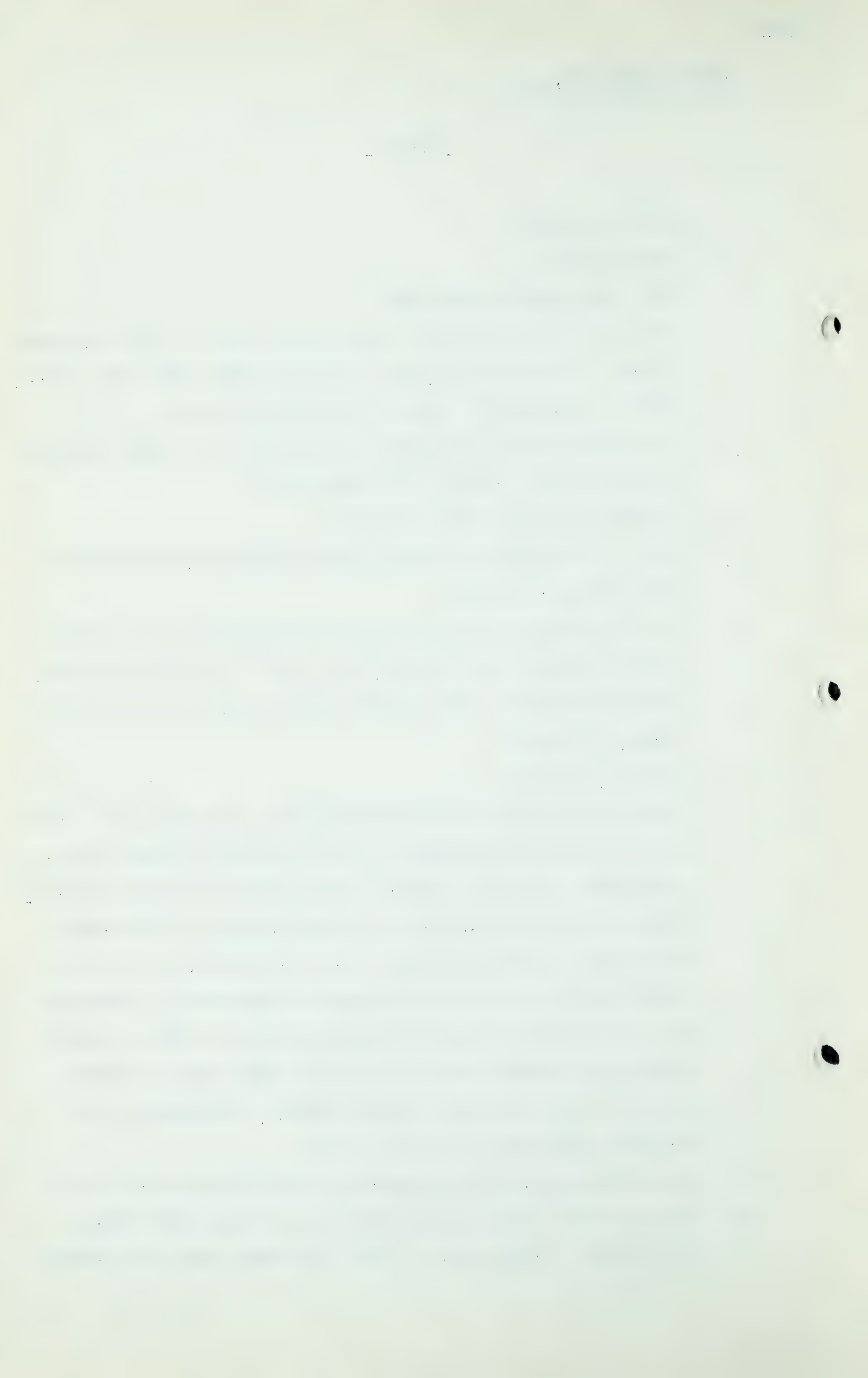
A It would suit us very fine if El Paso Natural Gas Company did have excess gas available for sale to the Northern Natural Gas Company. But I would like to point out to you a thing, if I may?

Q Yes, do, please.

A That is in relation to gas coming from the south end. There are two distinct problems so far as Northern Natural Gas is concerned. One is to obtain gas to meet new market requirements, which would require the construction of additional pipe line capacity, main line pipe line capacity, and the second problem is the replacement of depleted gas reserves of the Hugoton and Texas Panhandle fields as they decline. That would require one type of gas supply for our nearby system, and another type of gas supply, depending on the distance from these various fields.

Q An actual source of gas supply is the Permian Basin field?

A It is in West Texas, West Texas and southeast New Mexico, Lee County. While that is only 274 miles from our existing



John F. Merriam,
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pipe line, the southerly terminus. Nevertheless, if you purchase that gas for transmission through to our market area, and we have to build a new capacity, the distance from the Permian Basin pipe line to Southern Minnesota, where a substantial portion of our market growth would be, is approximately 1000 miles. Which is the same distance as the Southern Alberta field from the Northern terminus of our line. In other words, the distance for that reason is quite comparable, so far as new markets are concerned.

Q But all things being equal it is better to draw from an adjacent field, if you can, and it is there available to you?

A Other things being equal.

Q Tell me something more about the Williston Basin. Will you carry your plan of the Williston Basin up across the International Boundary into Manitoba and Saskatchewan for me, Mr. Merriam? Mr. Innis did not want to.

A You mean the map?

Q The map.

A I will be pleased to. I think it was discriminating against Canada in that map.

Q And it is discriminating against Canada on this map too, is it not?

A Yes, sir, on both maps. And we apologize for that.

Q You say as far as that area is concerned it is an excellent prospect and that you have found it very difficult to sell excellent prospects to distributors?

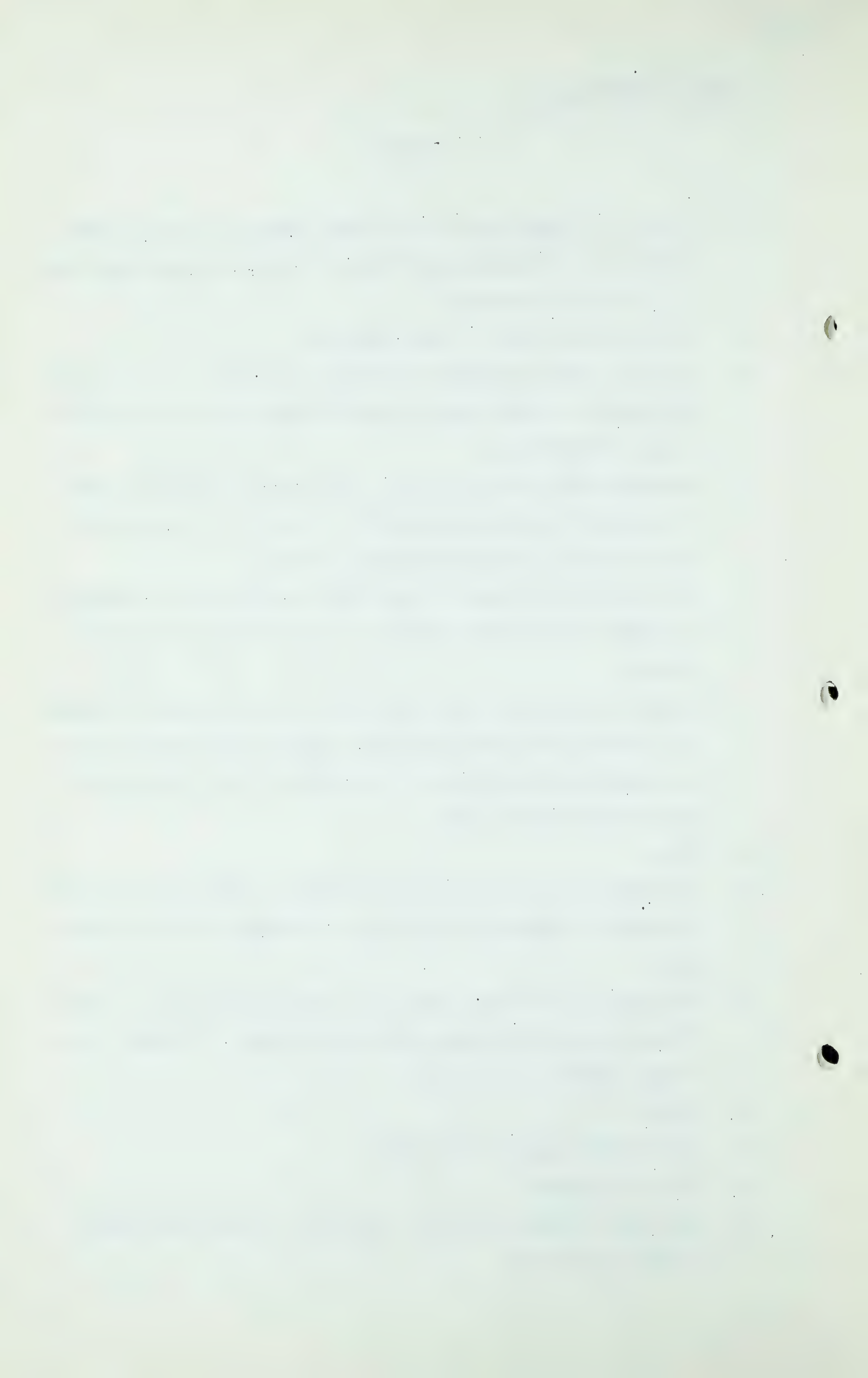
A That is correct.

Q Now, tell me, what is going on there? I really do not know. Tell me.

John F. Merriam,
Cr. Ex. by Mr. Nolan.

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- A There is a great deal of drilling going on, some of which comes out as dry holes and some of which have produced both oil and gas production.
- Q And where is that, in the Dakotas?
- A There is some in Eastern Montana, but more of it is in the Northwest of North Dakota around Tyoga, which is near the town of Williston.
- Q Assuming that there is a gas field in the Williston Basin that would be the most convenient place for you to obtain your supply, with your existing system?
- A We will be very glad to have that as well as the Southern Alberta source of gas supply to meet our market requirements.
- Q Leave the gas here for a moment. One other thing I wanted to ask you, and perhaps you can help me, Mr. Shomaker told us about your purchase at the border of gas from Western Pipe Lines at 27 cents?
- A Yes.
- Q And then he told us you could build a system which would be capable of delivering that gas to Minneapolis at 10 cents?
- A Yes.
- Q He said the total was 38 cents, which shocked me a little. There are probably some decimals in there. 38 cents is a rough figure, is it not?
- A Yes.
- Q At the Minneapolis City gate?
- A That is correct.
- Q But gas coming up from the south end is at a much lower price, is it not?



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A I think when you say "is that a correct statement" - we have had two rate increases and we have had hearings before the Federal Power Commission which, if they are successful, will increase our average realization from about 17 cents to about 22 or 23 cents. We have a third rate increase in the process of preparation for filing with the Federal Power Commission, which would bring the prices of gas coming from the other end, as you put it, up to approximately 27 cents.

Q All right. What happened to the application in Docket 1618? Was it granted?

A It is pending.

Q Was that an application in which you asked for a new rate of 23.6 cents?

A No, the application is for a certificate of Public Convenience and Necessity to build facilities.

Q And the rate that was put forward on that application was 23.6?

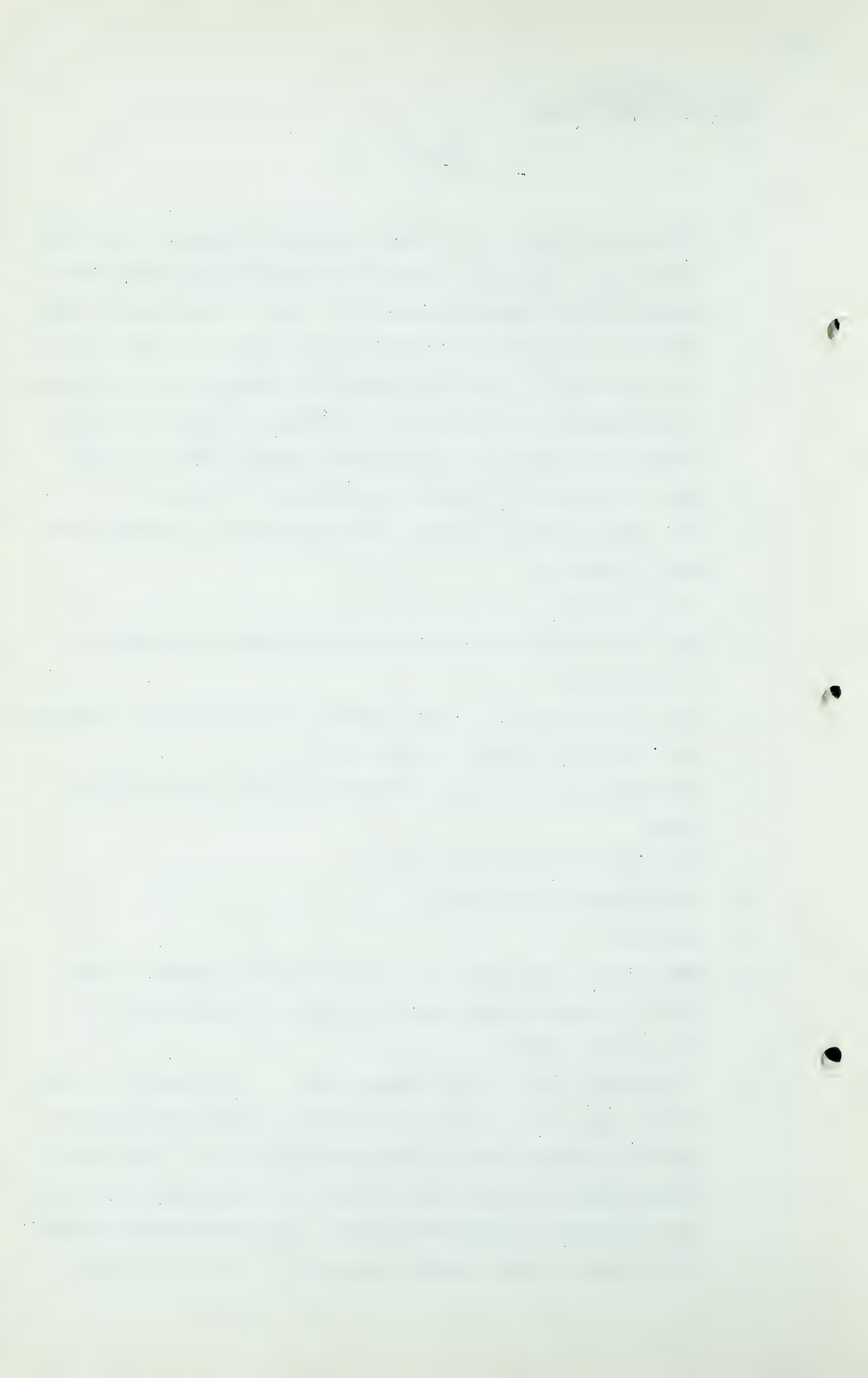
A There was no rate put forward.

Q No rate mentioned at all?

A No, sir.

Q What is the existing rate? Is it what Mr. Wrench told us in his evidence that it was 23 cents at the city gate at the present time?

A I certainly wish I could answer that. I can answer it only in this way, that we are now collecting under bond the rate which the Federal Power Commission may reduce. Those rates being collected under bond at this time incorporate both the rate increases I mentioned and the top rate schedule figure is $4\frac{1}{2}$ cents per day demand charge and 17 cents commodity



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charge which, added together on a 100% load factor, would give you a 21 cent, 100% load factor and town border price.

Q Now you tell me what the Federal Power Commission might do by way of increase?

A What they have permitted to go into effect in bond?

Q That means to say if it is not made permanent the money is paid back?

A Unfortunately so, yes.

Q It is a sort of escrow arrangement?

A Yes, that is right. There has been no ruling by the Federal Power Commission on that rate request.

Q So I am quite clear in saying to you, am I not, that the gas which would be supplied by Western Pipe Lines would reach the city gate of Minneapolis at the 38 cent price, whereas the price that the gas would come from the south, through your existing system, would reach that same city gate at the rate of 23 cents?

A No, that is not quite right, because my understanding of the timing in relation to that is that Western Pipe Line gas would not be available till the Fall of 1953.

Q Yes.

A By that time we expect our town border rates would be 27 cents.

Q You still expect there would be a differential between what you had to pay Western and what you can get yourself at your own city gate?

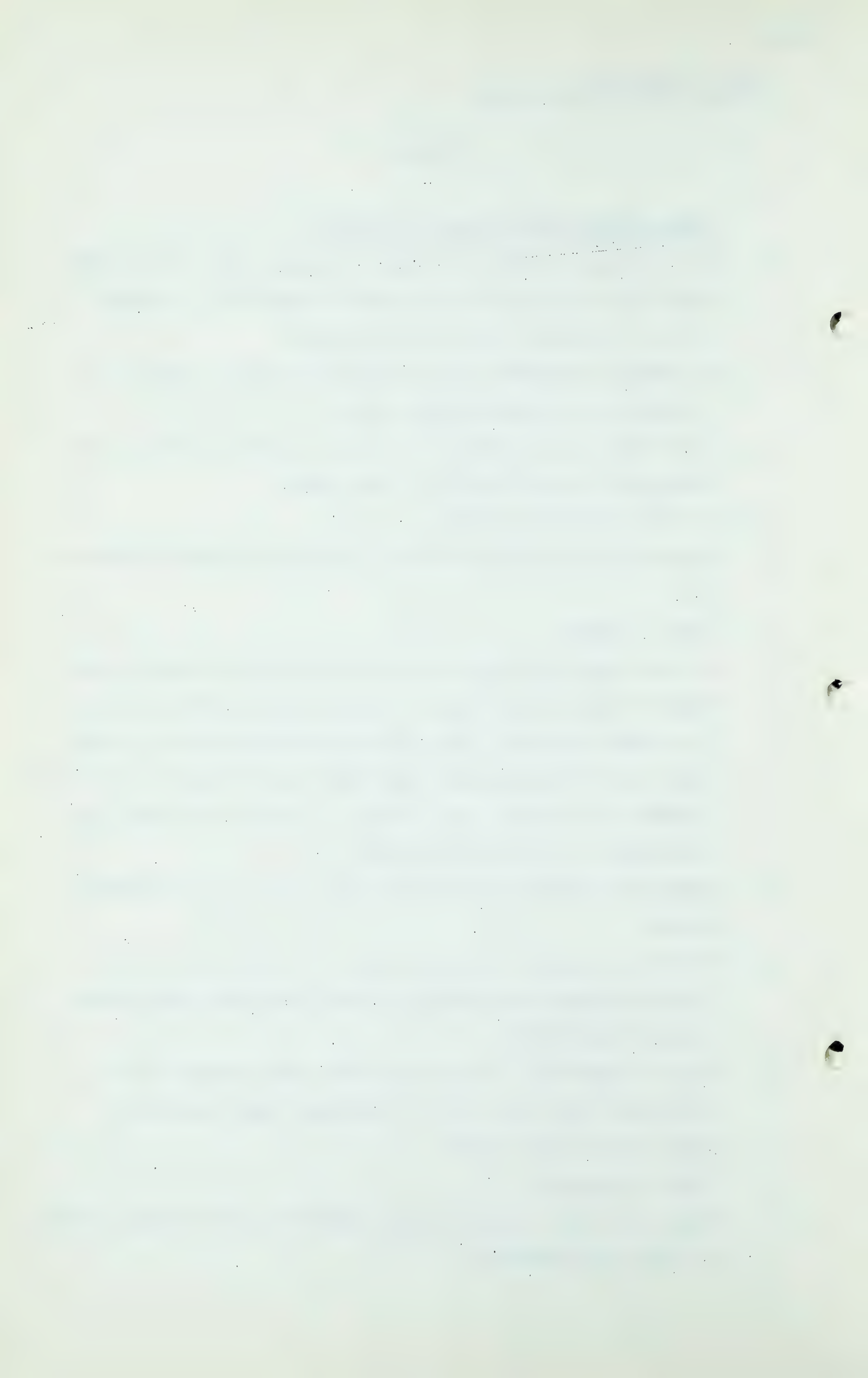
A Yes. That is exactly the same situation that prevails with any new source of gas that goes into our system for which we can construct facilities at higher cost than our previous facilities were constructed.

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Cr. Ex. by Mr. S. B. Smith.

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CROSS-EXAMINATION BY MR. S.B. SMITH:

- Q Mr. Merriam, if today you were to buy gas, say, in the Panhandle for 15 cents and then build a new loop, I suppose you would have to loop your line again?
- A It depends on whether you are building for new capacity or to replace the existing gas supply.
- Q Let us say you are doing it for new capacity. You are very interested in new capacity, aren't you?
- A We are interested in both.
- Q You want to keep this business going and you want to expand it?
- A That is right.
- Q If you bought your gas in the Panhandle at 15 cents or the Hugoton field at 15 cents - I do not know whether you can, but assume you can - and you build new facilities to transport that to Minneapolis, what would you deliver it there for?
- A I cannot give you an exact figure. It would be higher than either the 23 or 27 cent prices.
- Q Would it be higher than the 38 cent price you are talking about?
- A It would probably not be far out, Mr. Smith, if I am permitted to speculate with you on that, without having made any definite study.
- Q Now, Mr. Merriam, I take it you must have bought a lot of reserves or have had a lot of reserves under contract, particularly since 1946?
- A That is correct.
- Q What were your reserves, either owned by you or under contract in 1946, approximately?



John F. Merriam,
Cr. Ex. by Mr. S. B. Smith.

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A About 3-1/3 trillion feet.

Q And there are now over 6 trillion?

A They are right at 6 trillion.

Q So you have just about doubled your reserves and you are still hungry for gas?

A We are trying to meet our obligations to the consumers in our market territory.

Q You are anxious to get gas to fill the contracts, you like to do that?

A We are anxious to do our business, which is to get gas for our market. I rather enjoy it, too, yes.

Q And your company does too. Now, have you been continuing to make efforts to acquire other contracts for gas and other gas reserves?

A We have.

Q Continuously, I take it?

A Continuously.

Q In fact, you have been very active in that regard, haven't you?

A Right. I will go along with you on that.

Q You have not been as successful as you hoped to be?

A That is right.

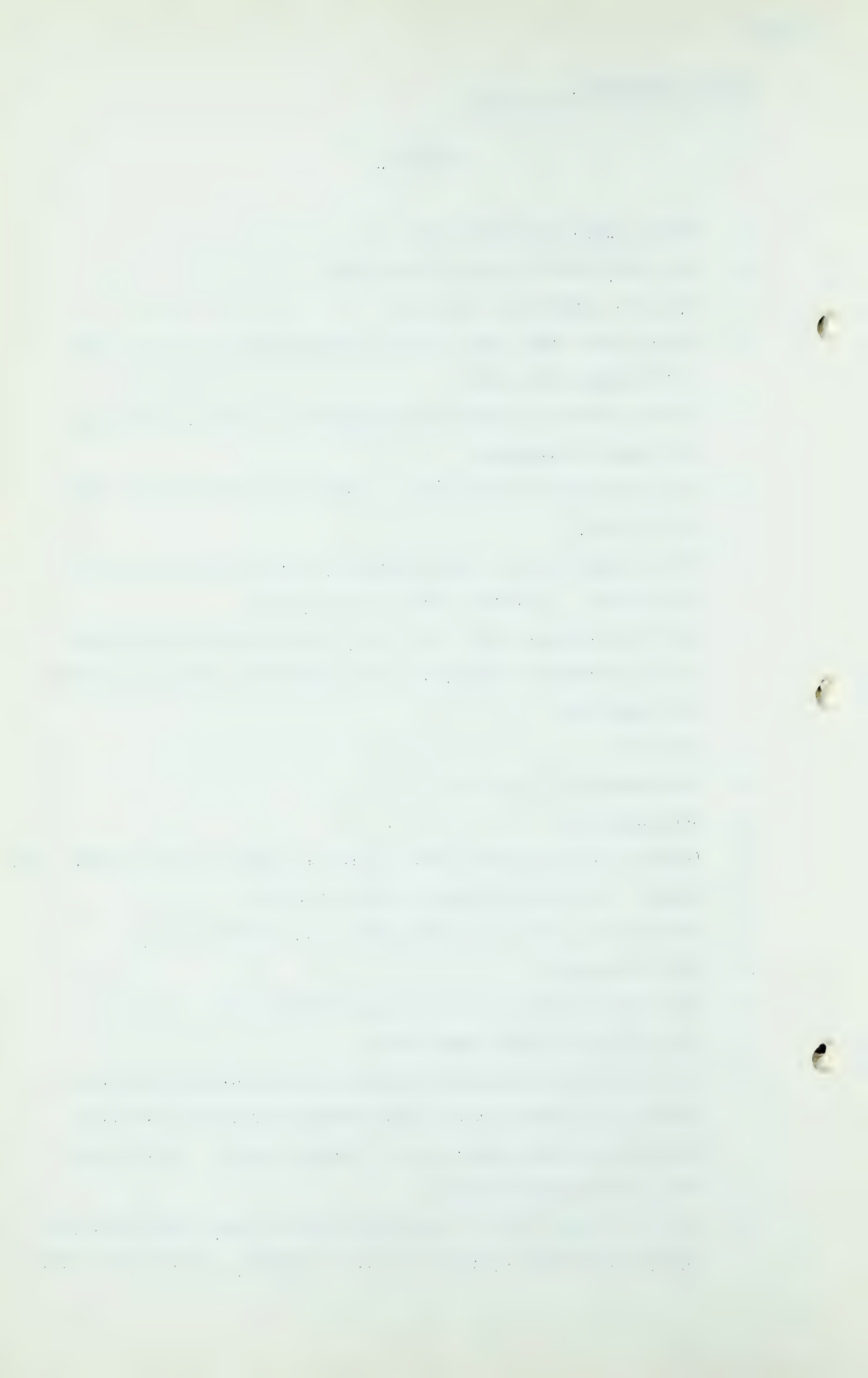
Q Mr. Parmelee came up here first, didn't he?

A I do not know which came first.

Q Mr. Merriam, do you remember when Western Pipe Lines first filed their application, they proposed to build this line themselves right down into the United States, didn't they?

A That is my understanding.

Q And is it not a fact - I am not sure of this, but I believe Mr. Parmelee came up here, or your company, particularly with



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Cr. Ex. by Mr. S. B. Smith.

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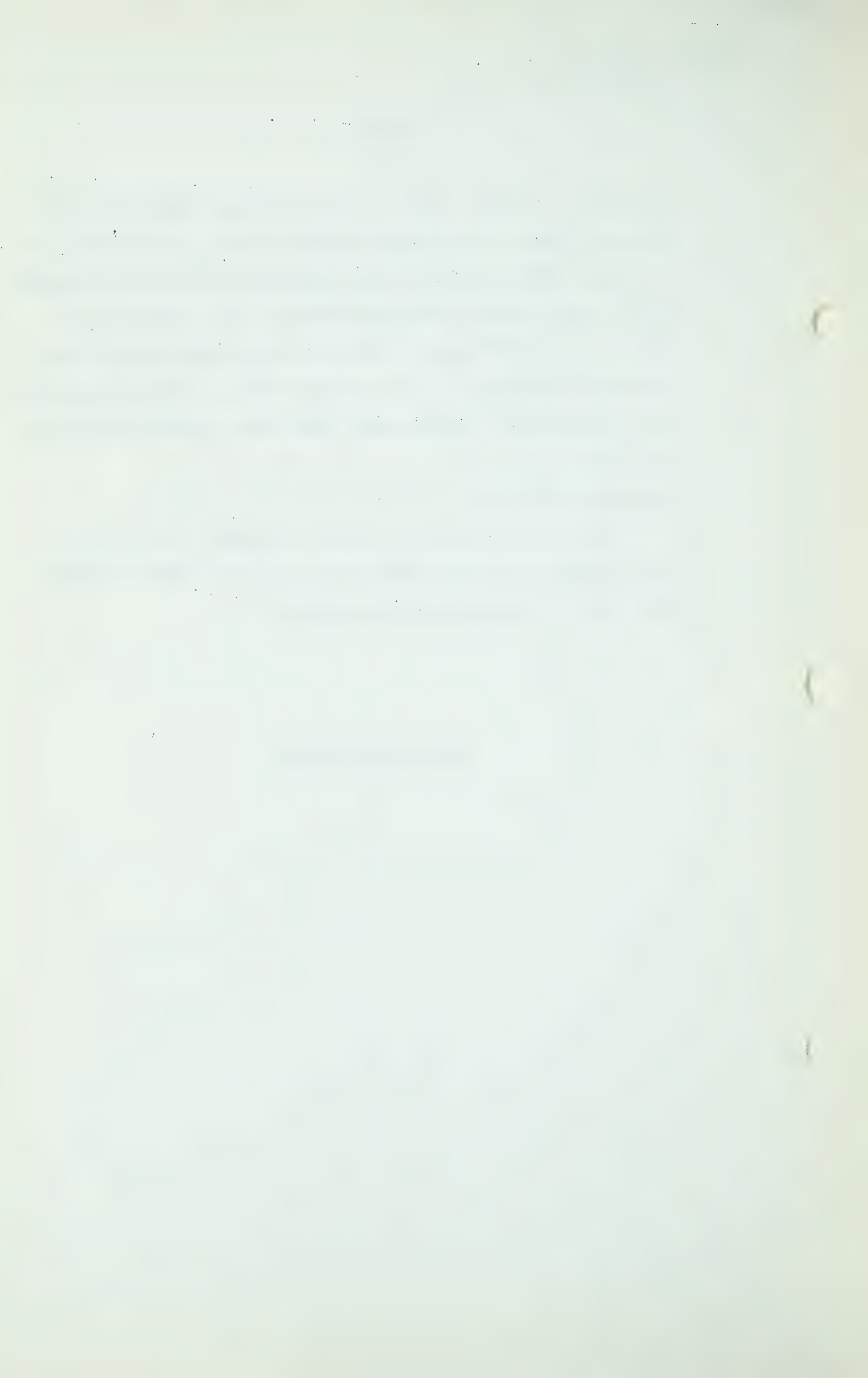
the idea of opposing Western Pipe Lines getting into the territory that you thought belonged to you, is that not so?

A We opposed Western Pipe Lines building into Duluth, Superior and the Iron Range territory which we have sought for a matter of 17 or 18 years, and if, as and when the load requirement develops to a point where the pipe line projection was economically feasible and there was a demand for gas in that area . . .

Q And gas available?

A . . . and gas available, and pipe available, and all the other things available, then we anticipated that we would build the 165-mile extension required.

(Go to page 3141.)



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Cr. Ex. by Mr. S.B. Smith.
Cr. Ex. by Mr. Milvain.

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Q So it looked for a while that there was a war looming up between you and Western Pipe Lines?

A Well, we don't go to war.

Q Instead of doing that you got together and they agreed to abandon building into the United States and you proposed to build up to the Border and join forces with them?

A I believe that is reasonable, surely.

MR. McDONALD: No questions.

THE CHAIRMAN: Mr. Martland, have you any more witnesses to call today?

MR. MARTLAND: I have one more, sir. He will not be lengthy.

MR. MILVAIN: Is it your wish that I cross-examine this witness now?

THE CHAIRMAN: Yes.

CROSS-EXAMINATION BY MR. MILVAIN:

Q MR. MILVAIN: Just a moment ago, Mr. Merriam, you told my friend, Mr. Smith, that you were going to add on 150-mile extension to get you up into the Duluth area?

A Well, we were going to extend that line. Not having projected the line we have not concluded any termination, Mr. Milvain.

Q You spoke of extending it 165?

A 165 miles is substantially into Duluth.

Q And would that be the destination you had in mind for your line?

A We would build the line where the load existed.

Q And there would be some extension up into the Iron Range?

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Cr. Ex. by Mr. Milvain.

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A It depends entirely where the load would grow. It might not be in the mines itself. There has been a line built on the north shore of Lake Superior.

Q How far would that point be away from the end of your 165-mile extension?

A This particular point?

Q Yes.

A I do not know the exact distance. I would estimate that it was some 35 or 40 miles east of Duluth.

Q East of Duluth?

A Yes, further away.

Q Now, I understand that about two years ago you had a contemplated deal with the Trunkline?

A We were negotiating with Trunkline for a gas supply, yes.

Q And was the supply there in mind something in the neighbourhood of 200,000, 250,000 per day?

A That is correct.

Q That is Mcf.'s per day?

A I understand.

Q Was it more or less than 250,000?

A They were talking about 250 million per day capacity.

Q And is that they were going to give you, 250 million per day?

A They would have been willing to make that gas available to us, yes.

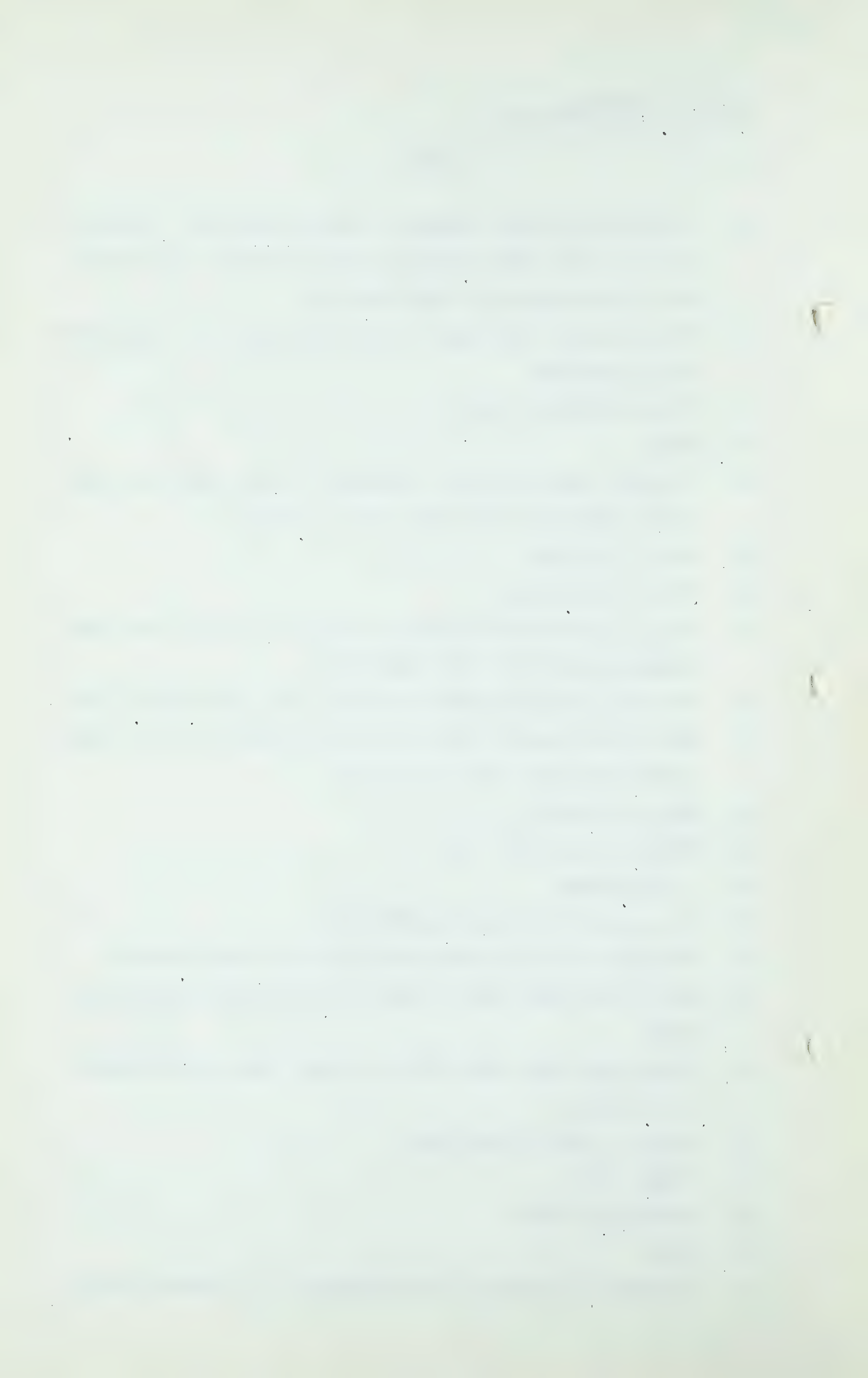
Q That is, 250 million feet?

A Cubic feet.

Q Or 250,000 Mcf.?

A Yes.

Q And an application was actually made to the Federal Power



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Cr. Ex. by Mr. Milvain.

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Commission to approve that scheme?

A Trunkline applied for a certificate, yes.

Q And the certificate was granted?

A That is correct.

Q And then it did not go ahead because you backed out of the deal?

A It did not go ahead because we were not satisfied with the gas supply picture, and for other reasons.

Q The gas supply there was to come from the Gulf Coast area?

A That is correct.

Q That scheme was then taken over by Panhandle?

A The Panhandle Eastern Company purchased the stock of Trunkline Gas Supply Company, as I understand it.

Q And the gas is now proceeding along that line up to the south end of Lake Michigan?

A The gas is proceeding through the Trunkline system, not necessarily a source they were talking to us about.

Q In the same general area?

A In the same general area.

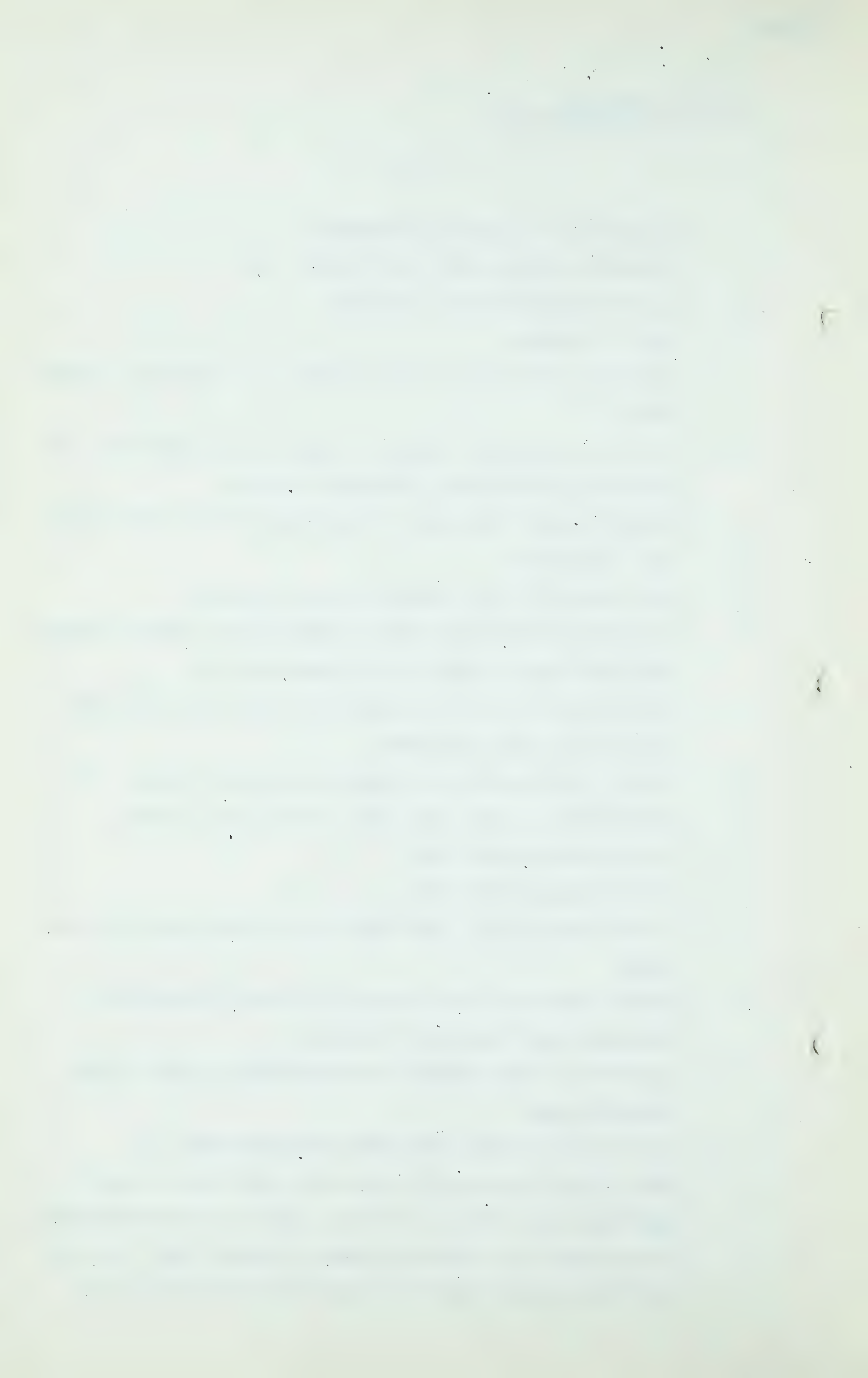
Q So that the gas you might have had is now being used elsewhere?

A We have replaced that gas with other gas we might not otherwise have been able to obtain.

Q Couldn't you have gotten the replacement as well as the Trunkline gas?

A We could not at that time have absorbed both, no.

Q Now, I was wondering this, too, Mr. Merriam, you were speaking to my friend, Mr. Nolan, about the discontinuance of using gas as a source of making carbon black. Do you know how much gas would be freed for other use in your



John F. Merriam,
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system if the use of gas as boiler fuel was discontinued?

A I would assume there would be no additional gas available for use. Practically all of the boiler fuel gas to which you refer is off-peak delivery. You buy gas on the basis of filling your pipeline capacity.

Q If the gas were not being used as boiler fuel, could it not be used for some other purposes?

A Whoever has that gas under contract at this time you would have to get them to release it.

Q You have got it now on an interruptible basis?

A We would not be able to increase our pipeline capacity one cubic foot if we discontinued all of the sale of interruptible gas which we now make.

Q I see. And you would have none for the purpose of supplying other customers?

A No, sir.

Q Now, I was wondering this, generally, and we are not going to deal with you as an expert on taconite, Mr. Merriam.

A Thank you.

Q We have been told something about that, but you agree, I am sure you agree with the other witnesses. that this taconite is a low grade iron ore?

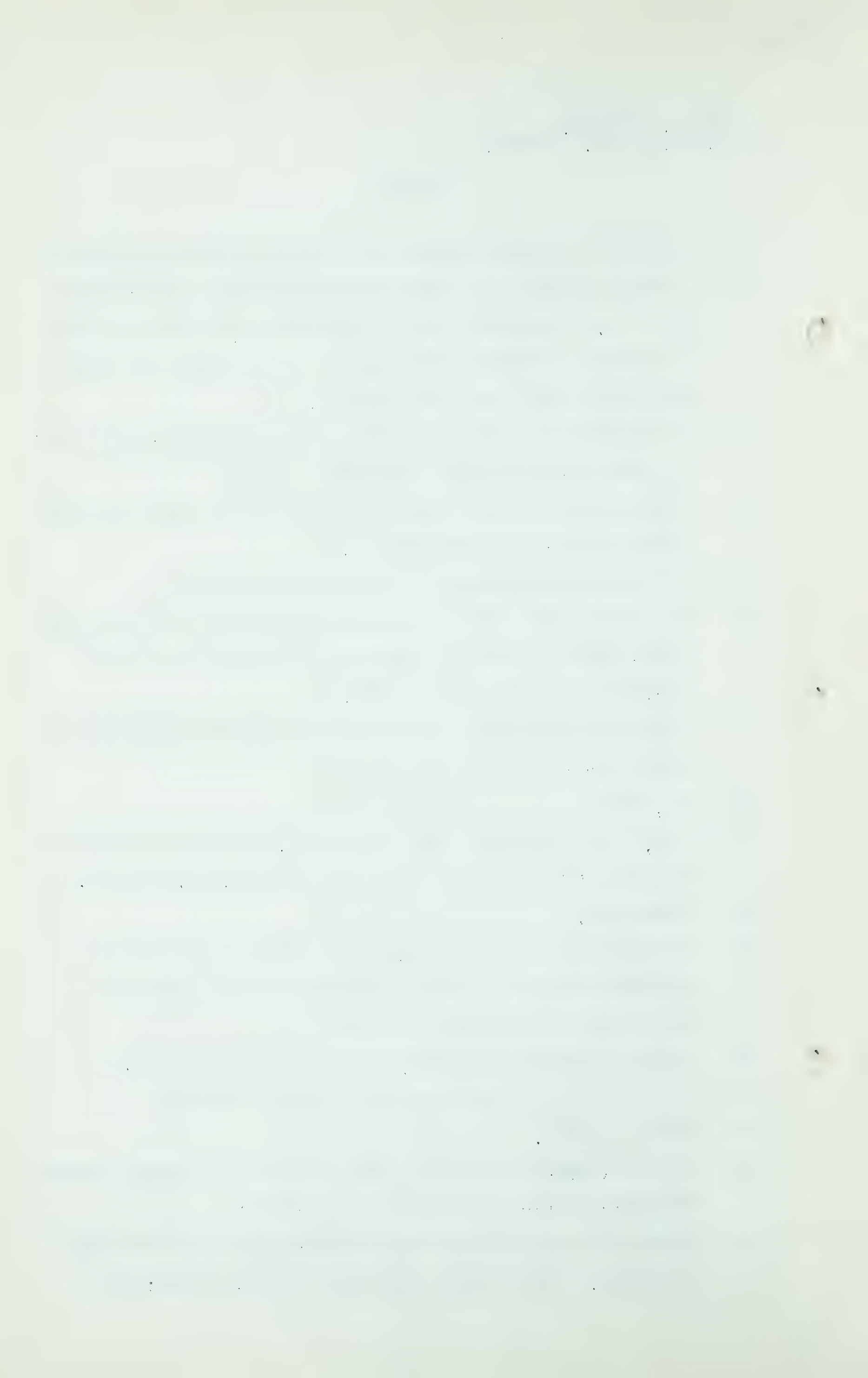
A Iron ore is not low grade, it is less concentrated.

Q It is a more difficult process to make it useful?

A That is right.

Q The only function gas would serve would be to supply cheaper fuel for whatever process it is used in ?

A There are a great many different processes for treating taconite. Some involve heat, some involve power; it



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Cr. Ex. by Mr. Milvain.

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depends which method is finally used in developing taconite reserves.

Q Gas would form an essential agency in any of those functions?

A In the power load, no. It could be either coal, oil or gas.

Q Some other heat could be used?

A Generally speaking, yes.

Q At the present time, up in the area where this ore is developed, coal is being used as a fuel?

A Yes.

Q And the Lake boats that carry the ore away carry coal back?

A Yes. But it is not contemplated in anything that Northern Natural Gas Company has in mind that the relationship would disturb the use of the ore boats taking ore down the Lakes and the coal back, in that it would be contemplated that any load that existed in that area that did not require firm natural gas would be on an interruptible basis and that the ore boats could bring the coal back and store it in the summer and use it in the winter when gas would not be available, and the increasing fuel requirements which would result from the development of taconite would not, in my judgment, reduce the volume of coal going to that territory.

Q You do not feel any coal would be displaced in that area?

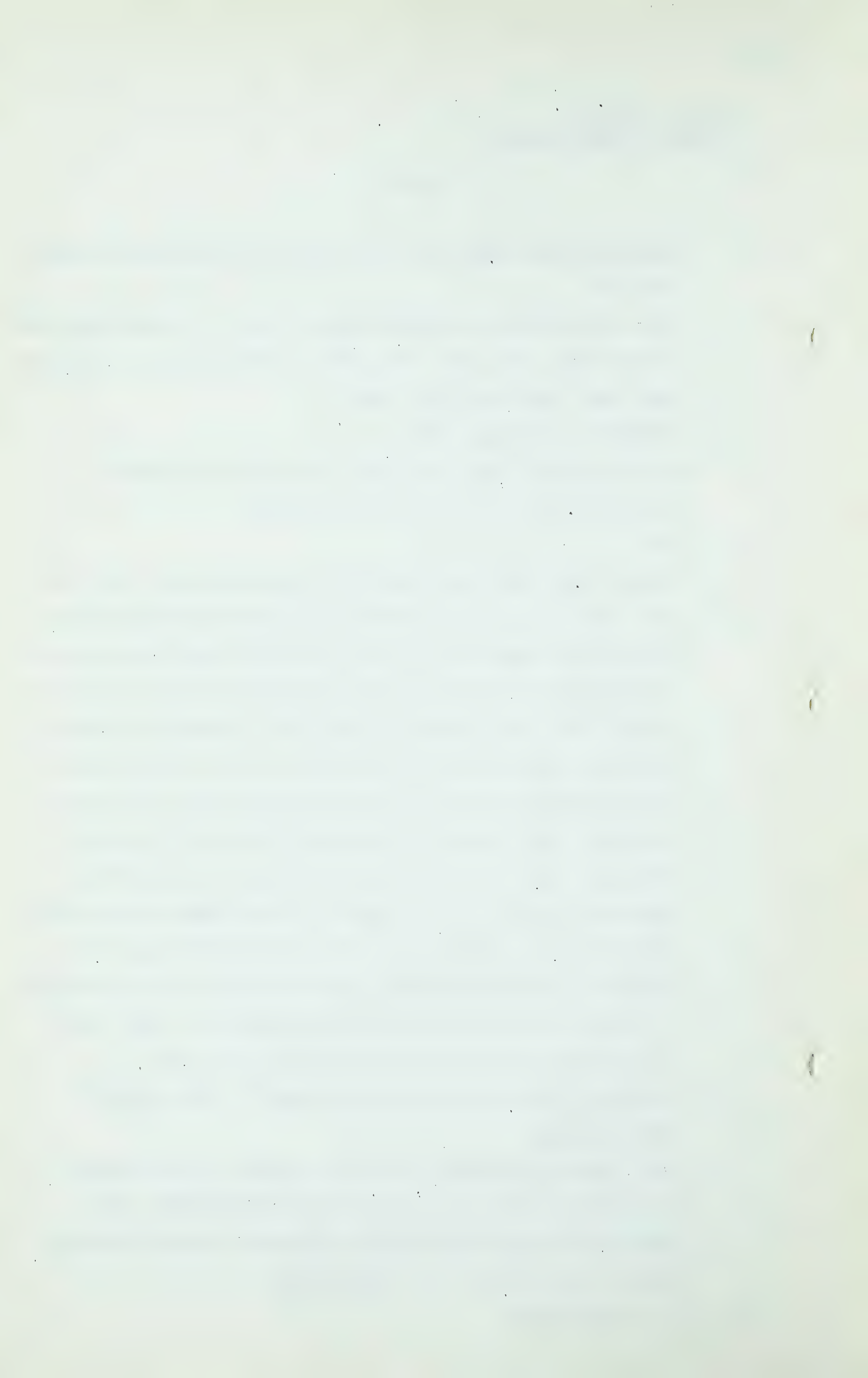
A I do not think any existing supply of coal, no.

Q You might just curtail the development of that market?

A That is right.

Q Just one other thought I wanted to pursue on that basis. As you know, I am sure, Mr. Merriam, considerable iron deposits have been discovered in Eastern Canada, Labrador, Quebec, and even out in Newfoundland?

A So I understand.



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Q And you know the Canadians are spending a lot of money on the St. Lawrence?

A That seems reasonable.

Q Possibly hundreds of millions of dollars in that regard?

A I have no estimate of the amount.

Q You would know it would be a very large amount of money?

A I would think so.

Q Do you think it would be economic on the part of Canada to supply this gas to make taconite a good competitor of this other ore?

A I have not gathered from what Mr. Deutch said that there would be any competition, it would be full utilization of all of the resources available.

Q You do not think there would be competition?

A I just do not know.

Q If there were competition, it would not be sound on an economic basis?

A I do not think that necessarily follows.

CROSS-EXAMINATION BY MR. BREDIN:

Q Mr. Merriam, does International Utilities hold any substantial stock in Northern Gas?

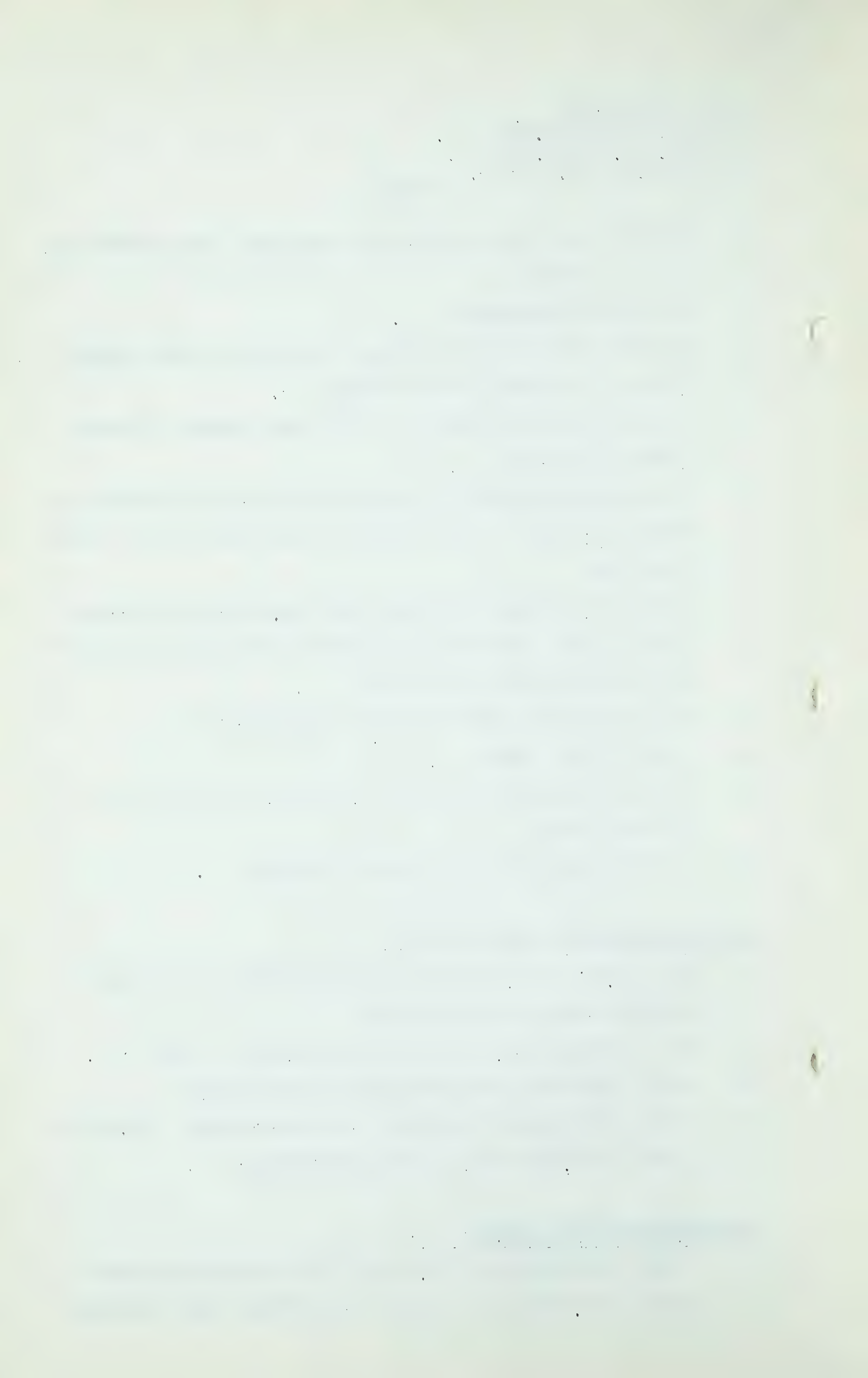
A As of record, they own no stock, as far as I know.

Q Do the Butchers of Philadelphia hold any stock?

A I have not checked the record for that purpose. So far as I know, they have got no stock ownership.

EXAMINATION BY DR. GOVIER:

Q I have one question. You recall hearing evidence given by Mr. Bruce Smith's clients to the effect that Panhandle



John F. Merriam,
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Eastern were interested in supplying for sale in Windsor about 250 million feet a day of gas?

A Yes.

Q I have been wondering why you have not got together with those people, why didn't you buy gas from Panhandle Eastern, it would be a lot closer to your system?

A We do buy a small amount from them but at the moment I do not understand that Panhandle Eastern itself has export gas available for sale. As I understood, they were transporting gas obtained by others to the Eastern Canadian situation.

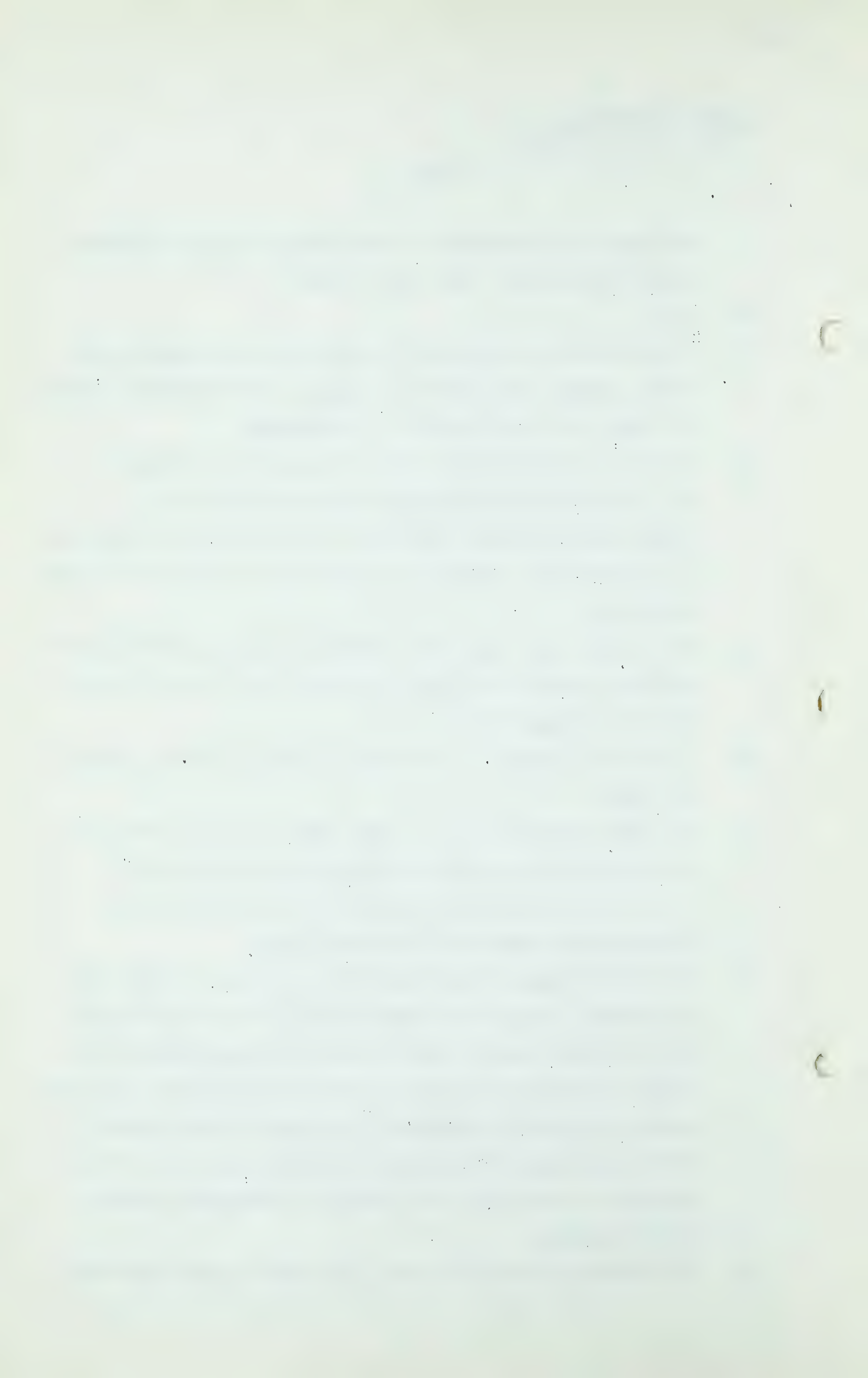
Q As I recall it, there was a Humble contract involved which supplied part of the 250 requirement but I do not believe it was to supply all.

A I have not followed it carefully enough to know. You may be right.

Q It just occurred to me it might make a peculiar situation if we should be exporting Alberta gas down into your territory and importing Panhandle gas right past your territory and right into Eastern Canada.

A Part of it might not go past our territory. I know this for certain, that the Panhandle Eastern Pipeline Company at the moment has no excess reserves for anybody in the Hugeton and other areas. It would seem to follow that any supply they got for Eastern Canada would come from the Gulf Coast area, the Trunkline system, which does not go through our territory but through the Panhandle system into Illinois.

Q You think the gas they might have would be gas that would



John F. Merriam,
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not be available to you in any case?

A It is my opinion they have not gas available for sale to offer anybody else in that area.

MR. C.E. SMITH: Just before we adjourn, Mr. Chairman, and that is all I was looking at you for.

THE CHAIRMAN: I think we will call this last witness.

E. G. SMITH, having been first duly sworn, examined by Mr. Martland, testified as follows:

Q Mr. Smith, you are a director of Nesbitt, Thomson & Company Limited?

A That is right.

Q I understand you are a graduate in commerce and finance from the University of Toronto?

A That is correct.

Q And you have been associated with Nesbitt, Thomson & Company Limited pretty well entirely from that time?

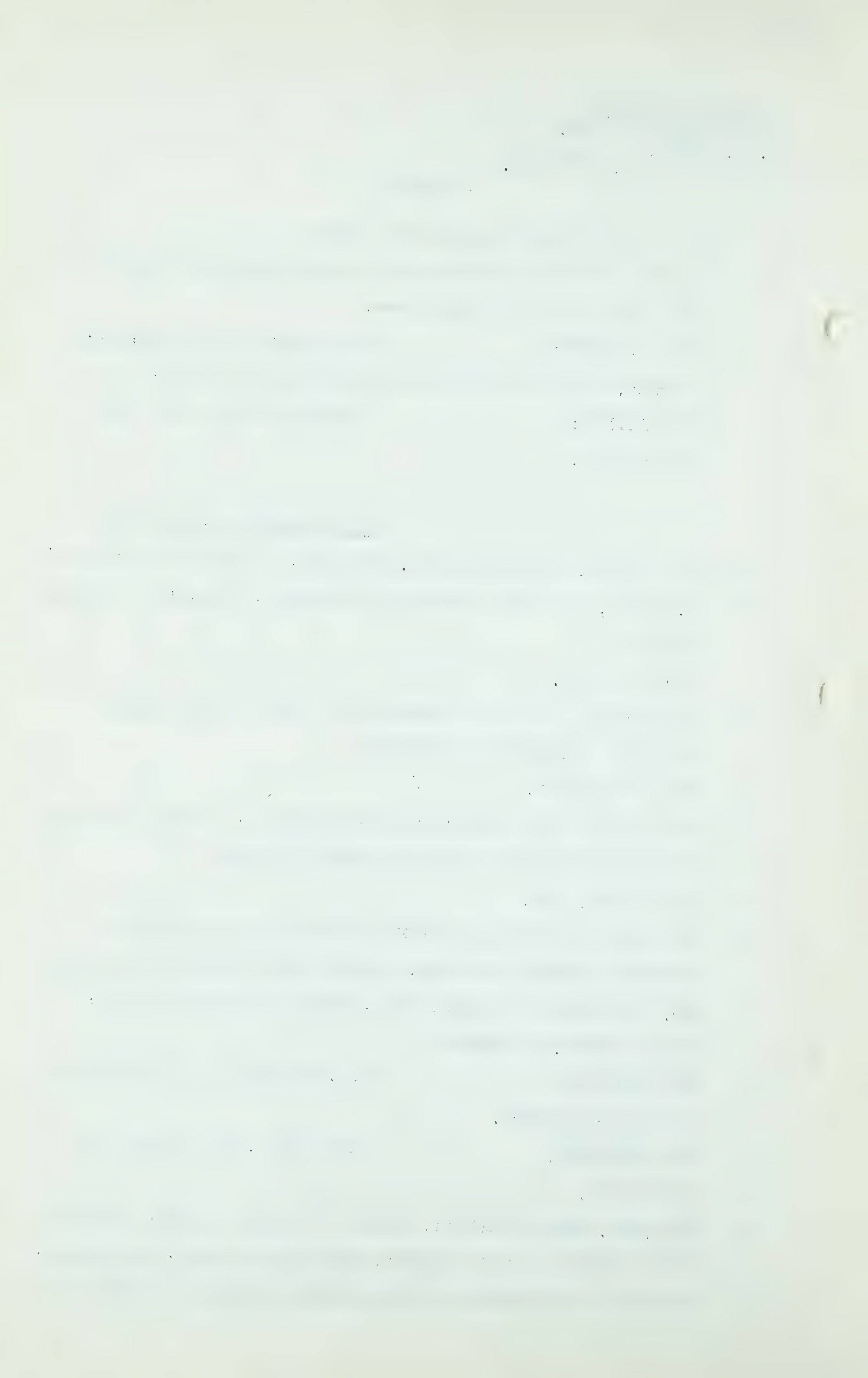
A Since 1926, yes.

Q And could you tell us briefly something about Nesbitt, Thomson & Company Limited, and the other companies to which Mr. Williamson referred, Wood, Gundy & Company Limited, Osler, Hammond & Nanton?

THE CHAIRMAN: Mr. Martland, I do not think that is necessary.

MR. MARTLAND: Very well, sir. Thank you very much.

Q Now, Mr. Smith, Nesbitt, Thomson & Company Limited and the other members of the syndicate mentioned by Mr. Williamson, have had the advantage of the studies prepared by Stone &



E. G. Smith,
Dir. Ex. by Mr. Martland.
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Webster Service Corporation which have been presented to this Board as Exhibits?

A That is right, sir.

Q And would you mind telling us your opinion as to the financibility of this project of Western Pipe Lines?

A Well, assuming an adequate supply of gas under contract and based upon the calculations contained in those reports that you speak of, and providing that there are no material changes in the financial market, we believe that the project can be financed.

Q And have you formed any ideas of how approximately it can be done, that is, the distribution of the bonded debt and equity?

A Not definitely. I think an exhibit has been presented by Stone & Webster which was put together for the purpose of making a calculation. That refers to approximately 70 per cent of the cost being raised by first mortgage bonds and the balance we have not, frankly, decided just exactly how to raise it. It would probably be done partly by way of a debenture, perhaps a convertible debenture, and partly by way of common stock, we now believe.

Q All right, thank you.

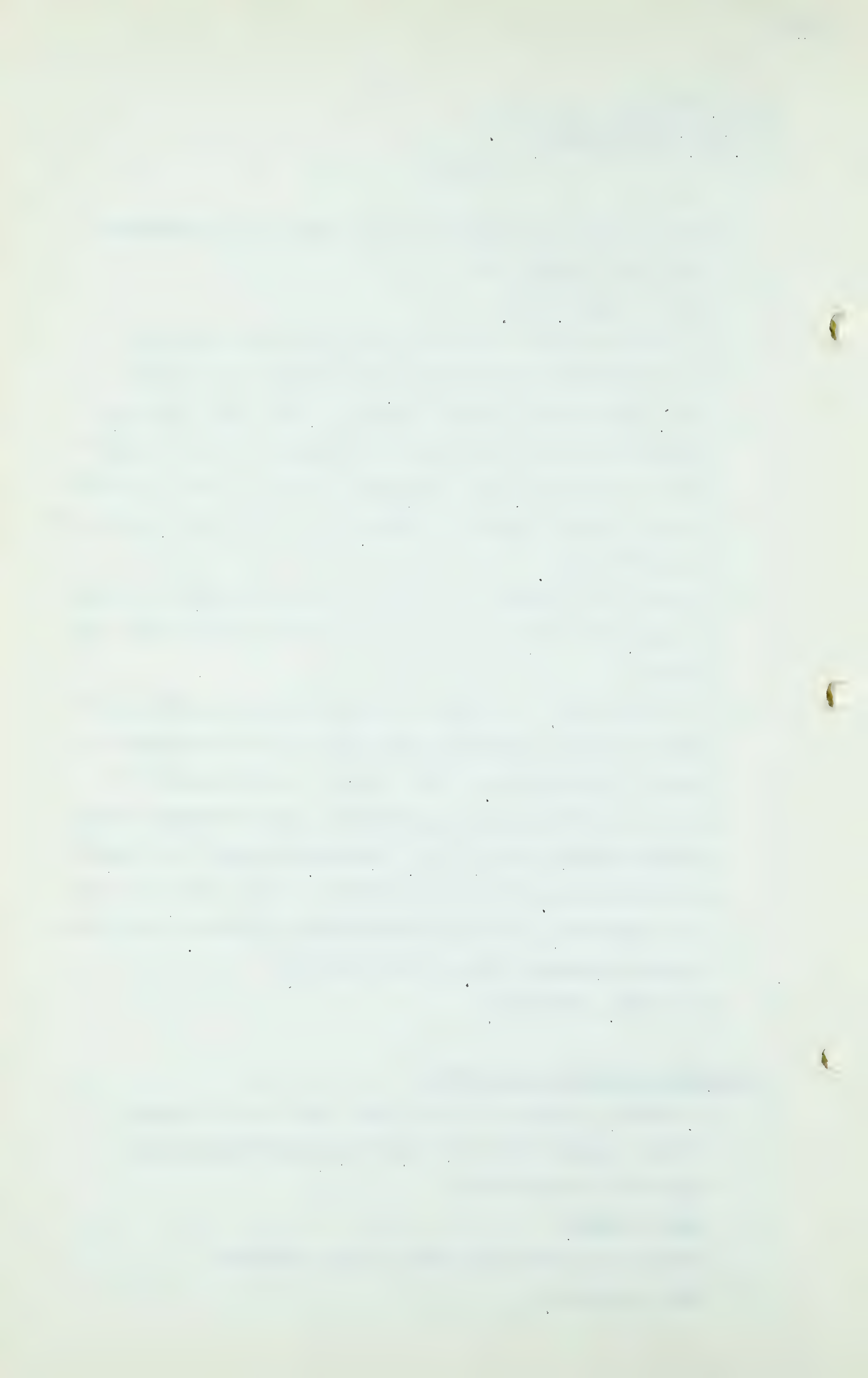
CROSS-EXAMINATION BY MR. NOLAN:

Q Mr. Smith, we have been told that there is a contract between Western Pipe Lines and Northern Natural with which you are familiar?

A That is right.

Q There is no price mentioned in that contract?

A That is correct.



E. G. Smith,
Cr. Ex. by Mr. Nolan.
Cr. Ex. by Mr. S.B. Smith.

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Q But that is a matter left for negotiation between the parties?

A Yes.

Q Would you be willing to finance this project if it only went so far as Winnipeg and had nothing to do with distribution in the State of Minnesota or any other of the United States?

A From evidence that we have received, information from the engineers and so on, I do not believe it is a practical project.

Q It has been said here, Mr. Smith, that if you are going to export gas from Canada at all in an easterly or a westerly direction you must have an American market at the other end of the line?

A That appears to be the case.

CROSS-EXAMINATION BY MR. S.B. SMITH:

Q Mr. Smith, has your firm ever financed a gas pipeline before?

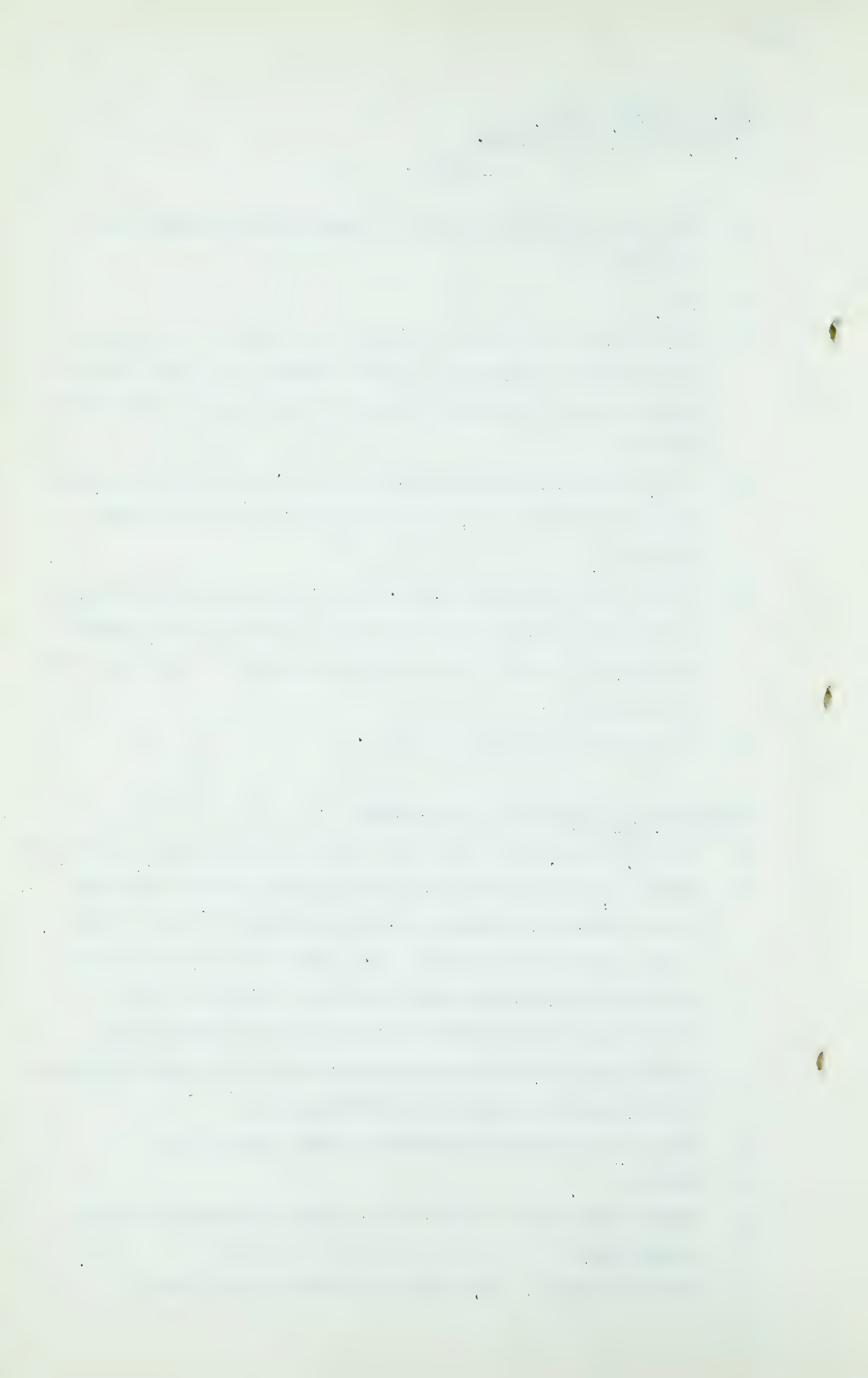
A Well, I do not believe any gas pipeline project has ever been financed in Canada, to my knowledge, so that I think I can answer "no" to that. We have had some experience in financing distributing companies, having done the financing of Northwestern Utilities about twenty-eight years ago, and we have been associated with inter-Provincial financing as a member of a banking group.

Q That is a different undertaking than a gas line?

A Quite.

Q There were a lot of people in on that financing besides yourselves?

A That is right. We might get others in this one.



E. G. Smith,
Cr. Ex. by Mr. Bredin.

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CROSS-EXAMINATION BY MR. BREDIN:

Q Mr. Smith, can you tell me how bonds of this nature would compare with municipal securities in their rate of interest?

A Well, that is a very hard question to answer in a general way. They certainly would command a higher rate than most municipal interests, yes.

Q Municipal securities, in my opinion, have gone up to $4\frac{1}{2}$ per cent now and a number of these pipeline bonds have been referred to as being something less than 4 per cent and none higher than $4\frac{1}{2}$ per cent, and that seems to me to be a low figure.

A I do not think it could be done under $4\frac{1}{2}$ per cent under present-day conditions, no.

Q You do not think it could be done under $4\frac{1}{2}$ per cent?

A No, under present-day conditions.

Q Where would you market those securities, in Canada or the United States?

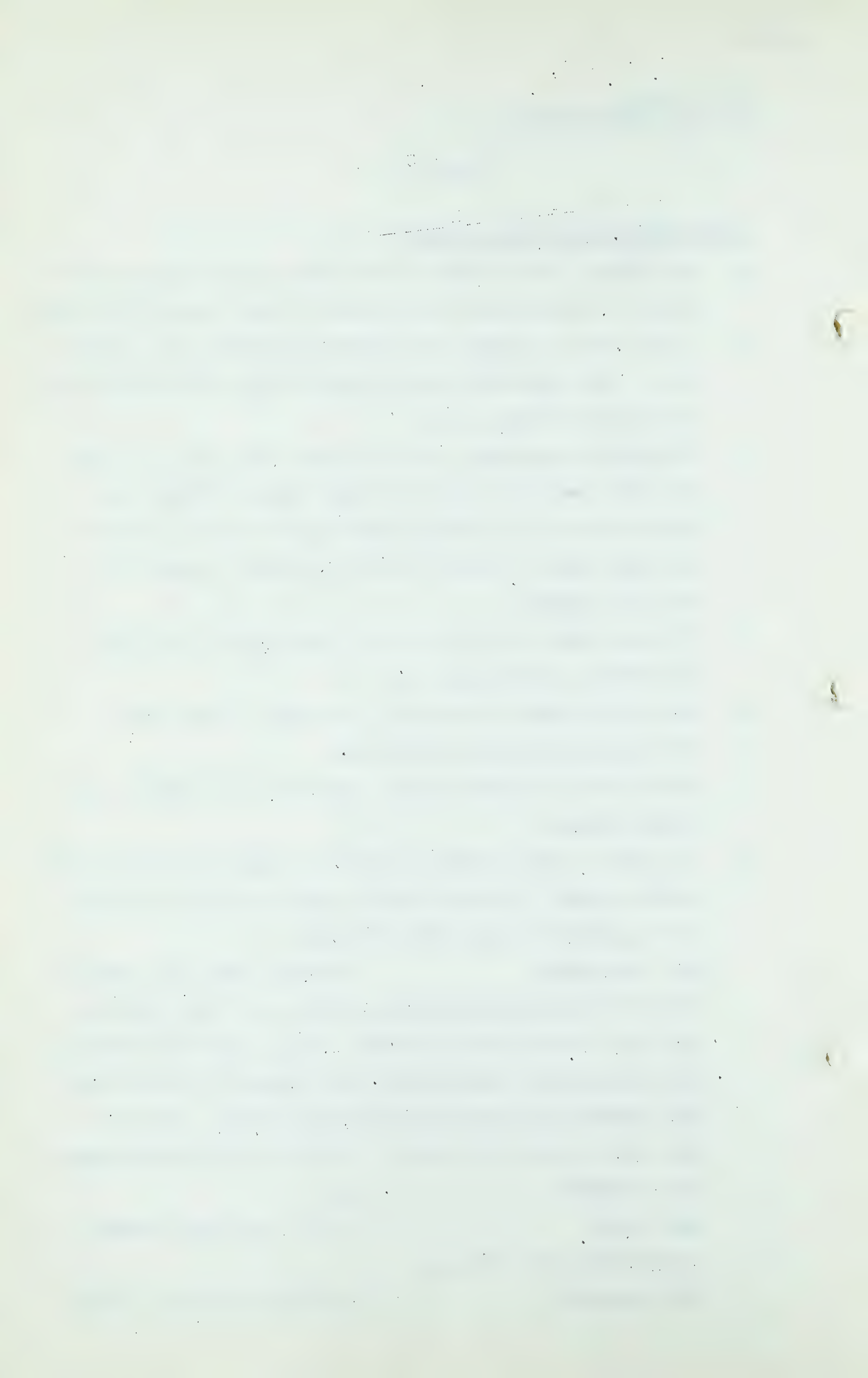
A It would be done in both countries. I can not tell you the relationship. I should think a large portion would have to be marketed in the United States.

MR. C.E. SMITH: I wonder, would you, for the benefit of counsel and myself, advise us if the order on the list I have here is correct. Now, I have Mr. Shattuck, Mr. Trostel, Dr. Hetherington, Mr. Milner for Inter-Field, Mr. Whitaker for the Coal Federation, and Mr. Crockford who will be called by myself. Is that your understanding?

THE CHAIRMAN: Yes.

MR. WELCH: We have one other witness to introduce, Mr. Harries.

THE CHAIRMAN: He could follow Mr. Trostel.



Discussion.

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MR. MARTLAND: I should tender an exhibit, a document which consists of gas contracts. I tender that now, sir.

GAS CONTRACTS PUT IN AND
MARKED EXHIBIT No. 116.

MR. MARTLAND: That completes our evidence except what we have to get for Dr. Govier.

MR. MILVAIN: In view of the way the agenda looks at the moment, I think I should tell you at this time that Mr. Whittaker, speaking for the Coal interests, comes about, it looks like, Friday, and as I can not be here on Friday I would arrange that my partner, Mr. McDonald, will probably take over. We may be able to see tomorrow how things go and if I could fit my people in before the end of tomorrow.

THE CHAIRMAN: Perhaps we could arrange it after the Delhi people.

MR. MAHAFFY: I would certainly like to accommodate my friend, but I would like to get on the end of the list, too. Mr. Milner was not due back in Edmonton until Friday night. I hate to be difficult at all because I know the problems you have.

THE CHAIRMAN: If we do not get through with Mr. Milner on Friday it looks as though you will have to be here on Saturday.

MR. MILVAIN: I am not sure that I would be back by Saturday, that is my difficulty.

THE CHAIRMAN: If we could fit it in anywhere and if not, we will have to wait.

MR. MILVAIN: I realize I must fit in with

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everybody else if I can.

MR. STEER: If Mr. Milvain will give us
an assurance he will be short, we will be sure to fit him
in.

(The Hearing then adjourned until 9:00 A.M.,
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everybody else if I can.

MR. STERN: If Mr. Milstein will give us

an assurance he will be short, we will be sure to fit him

in.

(The meeting then adjourned until 9:00 A.M.)

Thursday, December 13th, 1951.

1000 : 1000 : 1000

The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

Application for Permission to Remove or cause to be removed
Natural Gas from the Province of Alberta, under the Provisions of the
Gas Resources Preservation Act by Prairie Pipe Lines Limited.

I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

Session:

Volume_____

